DETERMINANTS AND CONSEQUENCES OF ATTRIBUTION STATEMENTS ON CORPORATE FINANCIAL PERFORMANCE OUTCOMES IN THE ANNUAL REPORT:

An empirical analysis of UK listed firms

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Abstract

This thesis explores causal attribution statements on performance outcomes given in annual reports of UK listed firms. The objectives are three-fold. First, it analyses the nature and extent of attribution statements provided. Second, it explores corporate governance factors and firm-specific characteristics that are related to the provision of attribution statements. Finally, it investigates the economic consequences of providing attribution statements by examining their association with the firm's cost of equity capital.

Using data drawn from a sample of 142 UK firms listed on the London Stock Exchange, content analysis was used to measure the extent of attributions in the annual reports for the year 2006. The results show that the volume of attribution statement provision is generally low and variation across firms is low. Firms also show a strong tendency to explain performance with internal rather than with external reasons. The results from regression analysis show that the volume of attribution statements and the space given to internal and external attribution statements is associated with the proportion of non-executive directors, director share ownership, audit committee size, market value, gearing, profitability and new share issues.

With respect to the relationship between the attribution statements and the cost of capital, the PEG model was employed to estimate the cost of equity capital. The findings indicate an association between attribution statement provision and the cost of equity capital, but only for firms with low analyst following. For these firms, more extensive performance explanations and more extensive internal explanations are associated with a higher cost of equity capital. However, attribution statements are unrelated to the cost of equity capital for firms with high analyst following.

The thesis makes two contributions in the area of attribution determinants. First, it measures attribution provision with a measure that has not been previously applied in the literature to measure attribution statements. Second, it provides evidence on how firm-specific characteristics and the firm's corporate governance mechanisms influence the extent and the type of performance explanations provided by firms.

The thesis makes four contributions regarding the effect of attribution statements on the cost of capital. First, it uses a quantitative approach to directly estimate the

cost of capital effects of attribution statements. Second, it provides evidence that the association between attribution statements and the cost of equity capital is influenced by an interaction between attribution statements and analyst following. Third, the thesis provides the first evidence of the relationship between attribution statements and the cost of equity capital in a UK setting. Fourth, it provides evidence that the relationship between disclosure and the cost of equity capital is complex and is influenced by interactions between disclosure and information intermediaries.

Keywords: Attribution Statements, Corporate Governance, Disclosure, Cost of Capital, Management Commentary

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The main objective of this thesis is to investigate the determinants and consequences of attribution statements (also referred to as performance explanations) in financial reports of UK listed firms.[1] The main objective of financial reporting is to provide information that is useful to participants in the capital markets to enable them to make economic decisions (International Accounting Standards Board (IASB) 2005), particularly relating to assessing a firm's financial position and performance, its use of economic resources and cash generating ability (Financial Accounting Standards Board (FASB) 1985; Accounting Standards Board (ASB) 1999). Consistent with this view, there has been a longstanding awareness among standard setters and regulatory bodies that financial statements and their footnotes alone are not sufficient to achieve this objective (Securities and Exchange Commission (SEC) 1989; IASB 2005). In this context, regulators (e.g. FASB 1985; ASB 1999; IASB 2005) have called for companies to provide non-financial information in the annual reports to supplement and complement the information provided in the financial statements. Previous research (e.g. Lee and Tweedie 1977; Courtis 1986) has repeatedly shown

[1] Throughout this study, the expressions "attribution statement" and "performance explanation" are used interchangeably.

that non-financial information is useful for investors for valuation and investment purposes. For instance, the results by Lee and Tweedie (1977) and Courtis (1986) show that the chairman or president's letter is the most widely read part in the annual report. Furthermore, Kaplan et al. (1990) found that the content of the president's letter influences decision making, and other studies reported that the letter contains information that is both useful for predicting future firm performance and for equity valuation (see McConnell et al. 1986; Swales Jr 1988; Abrahamson and Amir 1996). The Jenkins Report (1994) in the US also pointed to the insufficiency of financial statements and therefore called for more explanations and discussions of a company's operations and of factors influencing its future performance to the benefit of users. In this context, standard-setters and regulatory bodies around the world require or encourage the provision of complementary and supplementary commentaries of organisational accounting outcomes and future prospects in the annual reports (Cole and Jones 2005). For example in the US, the Securities Exchange Commission (SEC) requires listed companies to provide a narrative statement (SEC 2003), known as the Management Discussion and Analysis (MD&A). In the UK, the Accounting Standards Board (ASB 2006) encourages companies to include in their annual reports an Operating and Financial Review (OFR) by directors, and the Companies Act (2006) requires firms to provide an enhanced business review in the directors' report to discuss the performance, development and position of the firm (Companies Act 2006; Deloitte 2007). The European Union (2003) introduced enhanced requirements for companies to produce a directors' report[2]. More recently, in December 2010, the International Accounting Standards Board (IASB 2010) has released a non-mandatory *Management Commentary* statement as guidance for the preparation and presentation of management commentary.

The common objective of these regulations or best practice statements is to provide users with an analysis and explanation of a firm's performance and position through the eyes of management (SEC 1989; ASB 2006). As management can give a "unique insight" (Cole and Jones 2005, p. 137) on the company, this supple-

[2]Via the EU Accounts Modernisation Directive 2003/51/EC, Art. 1.14 (European Union Directive 2003/51/EC 2003).

mentary and complementary information sets the financial statement into context and can help investors in their assessment of the company's results and its future prospects by increasing their understanding of the reasons for changes in the financial statements, of factors influencing performance, and of the viability of a company's strategy (Cole and Jones 2005; IASB 2005; ASB 2006). This means that the provision of explanations for performance outcomes is seen as beneficial to the investor.

Consequently, a lot of research (e.g. AIMR 2000; Clarkson et al. 1999; Rogers and Grant 1997; Barron et al. 1999) has examined the information content of narratives, whether these explanations are indeed useful. In line with the claims made by standard setters and regulatory bodies (e.g. SEC 2003; IASB 2005; ASB 2006) that performance explanations improve decision making, the studies into the usefulness of narrative information have provided evidence that narrative information, in particular management's discussion and explanation of firm performance, is a crucial component in analysts' firm valuation processes. For example, the Association of Investment Management and Research (AIMR 2000) survey revealed that 86% of the participating financial analysts stated that management's discussion of firm performance was either extremely or very important for firm valuation. Similarly, Clarkson et al. (1999) surveyed financial analysts and demonstrated that MD&A disclosures provide incremental information that is used by analysts for financial analysis. Rogers and Grant (1997) found that the narrative sections in the annual reports of firms provided 40% of the information cited in analysts' reports. Barron et al. (1999) revealed that MD&A information on capital expenditures is associated with less error and dispersion in analysts' earnings forecasts. Eikner et al. (2000) reported a significant association between prospective information and abnormal security returns, and Bryan (1997) found a significant association between information on planned capital expenditures and current and future stock returns. Further, Bryan (1997) documented that retrospective information on sales volume changes and general prospective information are associated with next period's changes in sales, earnings per share, and capital expenditures, as well as analysts' sales forecast revisions. Cole and Jones (2004) pro-

vided evidence that information on historical revenue changes and certain prospective information, such as on capital expenditures, are positively associated with future revenue and income changes, as well as with contemporaneous stock returns. Taken together, these studies demonstrate that narrative information is useful to market participants.

1.2 Research problem

The discussion in the preceding section highlights that the usefulness of narrative information has attracted considerable attention by researchers. Although academic research has extensively examined the importance of narrative information and its use by users, the studies have tended to focus on the information content of aggregate narrative disclosures (Clarkson et al. 1999; Barron et al. 1999) and the predictive ability of its various components (e.g. Bryan 1997; Eikner et al. 2000). However, there is very limited research on attribution statements (or explanations of performance outcomes).

Attribution statements are causal explanations for an outcome, where a reason or cause is assigned to an event or outcome (Kelley and Michela 1980; Harvey and Weary 1984; Martinko et al. 2007). The environment reacts to attributions and how an outcome is explained and uses the attribution to assess and shape its perception of the attributor (Harvey and Weary 1984; Lee et al. 2004). Depending on how the environment sees the explanation, the attributor can be perceived favourably or unfavourably (Lee and Tiedens 2001; Lee et al. 2004). Companies use attribution statements in several ways, such as to legitimise their actions and performance (Pfeffer 1981; Staw et al. 1983), and to attract or reassure the public and investors (Staw 1980; Salancik and Meindl 1984), or to provide the environment with an interpretation of their results to guide perception (Aerts 2005).

In this thesis, two issues are examined to extend the literature. First, it examines the determinants of the extent and nature of attributions provided in annual reports. In particular, it explores whether corporate governance factors influence attribution

statements. Second, it investigates whether attribution statements are value relevant, that is, whether they affect the cost of capital. In the context of the determinants of attribution statements, Aerts (2005) shows that attributions are influenced by the industry in which the firm operates, whilst Clatworthy and Jones (2003) demonstrate that attribution behaviour is influenced by performance. Aerts and Tarca (2010) show that differences in disclosure requirements and litigation across countries influence attribution statements leading to US firms being more moderate and formal in their attributions than firms in the UK and Australia.

Other studies (e.g. Bettman and Weitz 1983; Salancik and Meindl 1984; Huff and Schwenk 1990; Baginski et al. 2004; Baginski et al. 2008; Aerts 2005; Aerts and Tarca 2010; Aerts and Cheng 2011) have shown that the provision of attribution statements is affected by factors such as firm size, profitability, or gearing. However, these studies do not address the effects of corporate governance factors on attribution behaviour. Understanding the effects of corporate governance is important especially given that in the UK the Companies Act (2006) requires that the directors' report in the annual report provides an enhanced business review that discusses the performance, development and position of the firm. The Companies Act does not, however, specify the extent or nature of the explanations, leaving it to the discretion of the managers. Similarly, the UK Corporate Governance Code (FRC 2010b) recommends that the board of directors provide a balanced review of the performance and position of the company, and such review should provide an explanation of the factors influencing performance outcomes.

Whilst there are several studies examining the relationship between general disclosure and corporate governance (see for example Williamson 1985; Forker 1992; Core 2001; Mangena and Pike 2005; Armstrong et al. 2010; Beyer et al. 2010), there are virtually no studies that examine the impact of corporate governance on attribution behaviour. Hence this study fills this gap in the literature. Barton and Mercer (2005) argue that attribution statements are a key component of a firm's disclosure strategy, and the literature (e.g. Forker 1992; Chen and Jaggi 2000; Ho and Wong 2001; Eng and Mak 2003) has demonstrated that corporate governance

influences overall disclosure strategy. The implication is that attribution statements should also be influenced by a firm's corporate governance system. Indeed, the Smith Committee (2003) explicitly states that the task of a firm's audit committee is to oversee financial reporting as part of the firm's corporate governance system, and that task should cover reviewing additional information related to the financials, such as performance explanations. Further, Aerts (2005) and Aerts and Tarca (2010) note that performance explanations have become a key component in the system of public accountability. Such explanations allow a judgement on whether management has put the firm's resources optimally to work. Providing explanations reduces information asymmetry and can give investors more insight into whether management is capable of creating shareholder wealth. Moreover, Barton and Mercer (2005) argue that the board of directors may use performance explanations to evaluate management's performance. Hence stronger corporate governance mechanisms could increase accountability pressures and so induce management to be more forthcoming about the reasons for performance. Also, stronger oversight might dampen management's attempts at impression management, leading them to be less defensive (avoid blame for negative outcomes) and less self-enhancing (claim responsibility for good outcomes) in their attributions.

Similarly, with respect to the value relevance of a firm's causal attribution statements, this has not been given much attention in the literature. This is surprising given that standard setters and regulatory bodies see explanations for corporate performance outcomes as useful for improving investors' economic decisions, hence require or encourage their provision (SEC 2003; ASB 2006). In addition, prior research reported that explanations of performance outcomes dominate the MD&A section of annual reports (Collins et al. 1993), and make up more than half of the narrative sections of annual reports (PriceWaterhouseCoopers 2007a). Consequently, there have been calls in the literature for more academic research to better understand the valuation implications of attribution statements (e.g. Baginski et al. 2004; Barton and Mercer 2005), and particularly their effects on the firm's cost of capital (Barton and Mercer 2005). Furthermore, there have been calls for more research on the

relation between disclosure and the cost of capital in general, and particularly to understand how different types of disclosures affect the cost of capital (e.g. Healy and Palepu 2001; Botosan 2006). Professional bodies (FASB 2001; ICAEW 2004) have also called for research to better understand the relation of information asymmetry, disclosure, and the cost of capital. This thesis responds to these calls by exploring the effect of attribution statements on the cost of capital. Investigating this issue is important against the background of research showing that these statements are generally self-serving, that is, firms tend to attribute favourable performance to their internal environment and negative outcomes to the external environment (Clatworthy and Jones 2003; Aerts 2005). Given that attributions may influence shareholders' impressions of the company and therefore their reaction to the reported performance (Lee et al. 2004), the question of whether they are used by investors and influence the cost of capital constitutes an important issue to investigate (Barton and Mercer 2005).

To date, only a small number of studies (Baginski et al. 2000; Baginski et al. 2004; Barton and Mercer 2005; Baginski et al. 2008; Kimbrough and Wang 2009) have investigated the effects of attribution statements on stock price reactions and the cost of capital. However, there are some limitations which warrant further investigation.

First, the studies by Baginski et al. (2000), Baginski et al. (2004), Baginski et al. (2008) analysed attributions in voluntary management earnings forecasts. Attributions in management earnings forecasts are distinctively different from attributions in annual reports because they are not prescribed, are not related to audited information, and there is no regulation regarding the form or content of the information provided. In this context, it is reasonable to suggest that attributions in annual reports are different - they relate to the audited accounts, and, according to the Smith Committee (2003), should be subjected to review by the board of directors via its audit committee.

Second, the studies focused on stock price reactions using an event study method, thus have not examined the longer term effects (i.e., the cost of capital) of attributions. Barton and Mercer (2005) have shown that the plausibility of explanations

affects management's reputation with the market, and this in turn affects the cost of capital. Hence, Barton and Mercer (2005) call for studies to investigate not only the market's short-term reactions to the attributions, but also their longer term effects, as reputation effects last longer than a short-term reaction. Furthermore, in an event study it has to be assumed that the information has not been known to the market before, that is it is not impounded in price yet. This assumption may prove difficult to uphold in reality. Christensen et al. (2007) pointed out that the analysis of a longer term effect on the cost of capital does not assume that no information has arrived in the market prior to its official announcement.

Third, although Barton and Mercer (2005) found evidence for a cost of capital effect of attribution statements, the results are based on an experiment with financial analysts to investigate their reactions to attribution statements and performance expectations, using earnings valuation multiples derived from analysts' assessments to provide a proxy for the cost of capital effect. The authors could have extended this to an estimation of the cost of capital using one of several methods available to calculate an implied cost of capital (see e.g. Botosan and Plumlee 2005 for a review of methods) so as to give a quantification of the impact on the cost of capital.

More importantly for this study, the existing studies have all been carried out in the US institutional environment, and no identifiable study has yet considered this issue in other settings, particularly in the UK. The US environment is prescriptive in terms of disclosure requirements and has more demanding accounting and disclosure standards than many other countries worldwide including the UK (Levitt 1998; Ball et al. 2000; Clatworthy and Jones 2003; La Porta et al. 2006). Several studies (e.g. Leuz and Verrecchia 2000; Core 2001; Hail 2002) have also suggested that this high disclosure environment in the US would make it difficult to detect tangible effects of disclosure on the cost of capital due to lower disclosure variations. Additionally, the US is characterised by prevalence of litigation (Baginski et al. 2002; Clatworthy and Jones 2003) which restricts US companies' disclosure behaviour (e.g. Baginski et al. 2002; Rogers and Van Buskirk 2009). However, litigation in the UK is rare (Ball et al. 2000, Clatworthy and Jones 2003) so that UK firms face less danger of litigation and

have more discretion in presenting disclosures (Clatworthy and Jones 2003). In this respect, the UK provides a more appropriate environment to investigate attribution statement provision.

1.3 Research aims and questions

1.3.1 Aims

Pursuant to the above, the aim of this research is twofold:

1. To explore the determinants of causal attribution statements for corporate performance outcomes provided by management in corporate communications by UK companies. Specifically the research examines the relationship between attribution statement provision and corporate governance and firm-specific factors.

2. To investigate the economic consequences of attribution statements provided by management in corporate communication to the capital market in the UK. Specifically, the study examines whether attribution statements have information content for equity valuation by analysing their association with the firm's cost of equity capital.

1.3.2 Research questions

The thesis addresses the following research questions:

1. What is the nature and extent of attribution statements provided by UK listed companies on organisational performance outcomes?

2. Do corporate governance factors influence the extent and nature of attributions on organisational performance outcomes by UK listed companies?

3. Is the extent and nature of attributions on organisational performance outcomes by UK listed companies related to firm-specific factors?

4. Do attribution statements about organisational performance outcomes influence a firm's cost of equity capital?

5. Does this influence on the cost of equity capital depend on the types of attribution statements (e.g. internal or external)?

1.4 Summary research methodology

The research methodology used is summarised in this section.

The framework for the thesis was developed from a review of previous research and the theoretical literature. The thesis is based on a cross-sectional analysis of annual reports of a sample of 142 firms listed on the London Stock Exchange in the year 2006.[3] The year 2006 represents the most recent year of economic activity under regular conditions before the turmoil in the financial sector started to unfold in 2007. This ensures that the performance explanations given in the corporate documents are the result of normal attribution behaviour so that the results of the investigation are not unduly influenced by the effects of this major external event on the firms' operations and attributions.

Annual reports are considered the main document of firm communication with the outside (see chapter 5 methodology), thus it can be argued that the annual report is the main document for firms to justify performance and to provide accountability to investors. Also, the annual report has become a corporate Public Relations document firms use to promote a certain image and identity of themselves (Lee 1994; Stanton and Stanton 2002; Beattie et al. 2008). Attributions, as a primary means for justifying performance and convincing the public of the strength of the business, will therefore occupy an important part in the image-building role of the annual report. Against this backdrop and the widespread use of the annual report in the disclosure literature[4], annual reports are examined in this thesis.

To answer the research questions, two main regression models were specified:

[3] The list of sample firms is provided in Appendix A.1.

[4] See chapter 3 and chapter 5.

First, a model with attribution statements as the dependent variable to analyse the determinants of attribution provision. Second, a model with the cost of equity capital as the dependent variable to explore the effect of attribution statements.

To measure the extent and nature of attributions, a content analysis of the narrative sections of the firm's annual report, including the Operating and Financial Review (OFR), Chairman's Statement, and Chief Executive's Review, was undertaken. The basis of the content analysis was a checklist of performance outcomes to which firms provide attributions. The checklist was developed from a review of previous literature and a review of a sample of annual reports and this resulted in a final list of five corporate performance outcomes. These are *sales/revenues*, *costs*, *profit*, *cash flow*, *debt*. The content analysis approach used identified sentences on each item and counted the number of words used in attributing performance. The firm's attribution statement provision was measured as the percentage of the total number of words used for all attributions to the total number of words in the firm's narrative sections of the annual report. To ensure the reliability of the attribution measures, a second coder independently performed the content analysis procedure on a sample of 10 randomly selected annual reports. The results were compared and these were similar. In addition, following Poshakwale and Courtis (2005), the attribution measures were regressed against firm size, gearing, and profitability, factors that previous research has found to be related with attribution statements (see Bettman and Weitz 1983; Salancik and Meindl 1984; Baginski et al. 2004; Baginski et al. 2008; Clatworthy and Jones 2003; Aerts 2005; Aerts and Tarca 2010). The results show that the measures are related to these factors in the expected directions. These approaches to assessing reliability give reasonable assurance that the attribution measures are valid. In order to measure the cost of equity capital, the Easton Price-Earnings-Growth (PEG) model (Easton 2004) was used. The PEG model estimates an implied cost of equity capital based on analysts' earnings forecasts and stock price. The validity of the measure was tested by regressing these estimates against the traditional risk factors (beta, firm size, gearing, ratio of book-to-market value) and the results are consistent with previous studies (Fama and French 1992; Botosan 1997; Easton 2004), suggesting

that the measures are reliable.

Data analysis was done in three ways. First, descriptive statistics were used to obtain an understanding of the sample data and its distribution. Second, univariate analysis (Pearson) explored correlations between the dependent and the independent variables and helped to highlight potential multicollinearity problems. Third, multivariate regression analysis was used to test the hypotheses and to shed light on both the determinants of attribution provision and the effect of attributions on the cost of equity capital. To ensure that the assumptions underlying regression analysis were met, prior to running the regressions, the data were tested for normality, linearity, homoscedasticity, multicollinearity.

1.5 Summary of the key findings

This section presents a brief summary of the key findings:

1. The percentage of words in the narrative sections of annual reports taken up by attribution statements is generally low (about 5%), suggesting that the extent of attribution in UK annual reports is limited. Nevertheless, firms have a clear tendency to explain performance outcomes with internal factors rather than with external reasons. The percentage of words taken up by internal and external attributions is 3.7% and 1.9% respectively. This preference to use internal reasons to explain performance outcomes is independent from whether the firm's performance has increased or decreased, and can also be found across all industries examined in the thesis.

2. A number of corporate governance factors (proportion of non-executive directors, director share ownership) show a positive association with the extent of attribution statements in the narrative sections of the annual report and with internal attribution statements. Also, a number of corporate governance (audit committee size) and firm-specific factors (profitability, new share issue) show a negative association with the extent of attribution statements, and a negative

association with internal attributions (new share issue) and external attributions (firm size, gearing).

3. In terms of the consequences of attribution statement provision, the thesis finds that attribution statements influence the cost of equity capital, but only for firms with low analyst following. For the overall sample there is no association between attribution statement provision and the cost of equity capital. Yet for firms with low analyst following, more extensive performance explanations are associated with a higher cost of equity capital. Regarding the type of attribution statement (internal or external), there is a positive association between the cost of equity capital and the extent of internal explanations, but also only for firms with low analyst following.

1.6 Contribution to knowledge

The thesis makes six contributions in two areas. The first area is on the determinants of attribution statement provision. Here the thesis makes two contributions.

1. The thesis provides evidence on the amount and type of attribution statements provided in the annual reports of UK listed firms by measuring attribution provision with a measure that has not been previously applied in the literature to measure attribution statements. Attributions are measured as the percentage of words used for performance explanations to the total number of words in the firm's narrative sections that review and discuss performance and financial position to capture the extensiveness of attribution statements. This measure offers insight into an aspect of attribution statement disclosure not offered by previous research. Unlike other disclosure measures that previous research has used that only record the presence/absence of an attribution, the total number of explanations provided by a firm, or broad sentence-based measures, this measure captures how detailed a firm explains performance outcomes.

2. The thesis provides evidence on the factors that influence the extent and the

type of performance explanations provided by firms. The evidence relates to two categories of determinants, firm-specific characteristics, and the firm's corporate governance mechanisms in particular. As current evidence on the determinants of attribution statement provision is very limited, the study responds to the call by Clatworthy and Jones (2006) for future research to examine more factors that may influence a firm's accounting narratives, and analyse characteristics such as capital market access.

The second area to which the thesis contributes is on the effect of performance explanations on the firm's cost of equity capital. The contribution is fourfold.

1. The thesis provides evidence of the association between a firm's performance explanations and its cost of equity capital based on a quantitative approach to directly estimate the cost of capital effects. Unlike previous research that either analysed stock price reactions to attribution announcement (Baginski et al. 2000; Baginski et al. 2004; Baginski et al. 2008; Kimbrough and Wang 2009) or used earnings valuation multiples as a proxy in an experiment (Barton and Mercer 2005), this study uses an implied cost of equity capital measure. This method allows a precise quantification of the longer term effect as opposed to a short term market reaction or the use of earnings valuation multiples. Using this measure, the thesis shows that attribution statements are value relevant for firms with low analyst following, while for firms with high analyst following attribution statements do not affect the cost of equity capital.

2. The thesis contributes to the growing body of research (e.g. Espinosa and Trombetta 2007; Dhaliwal et al. 2011) on how different types of disclosure interact in their effect on the cost of equity capital by providing evidence on how the association between attribution statements and the cost of equity capital is influenced by an interaction between attribution statements and analyst following. To date, no study has analysed this effect.

3. The thesis provides the first evidence of the relationship between attribution statements and the cost of equity capital in a UK setting. While previous

research on the value relevance of attribution statements was done on US data (e.g. Baginski et al. 2000; Baginski et al. 2004), the literature in the UK has only examined factors that influence attribution behaviour (e.g. Clatworthy and Jones 2003; Aerts and Tarca 2010).

4. The thesis responds to calls for more research on the relation between disclosure and the cost of capital by both academic studies (e.g. Healy and Palepu 2001; Botosan 2006) and professional bodies (ICAEW 2004) to better understand the relation of information asymmetry, disclosure, and the cost of capital. It provides evidence that the relationship between disclosure and the cost of equity capital is complex and is influenced by interactions between disclosure and information intermediaries.

1.7 Structure of the thesis

Chapter 1 introduces the research problem and presents the research aims and questions, followed by the research methodology to carry out the analysis. Subsequently, the key findings are summarised. The chapter concludes with highlighting the contribution to knowledge and the outline of the structure of the thesis.

Chapter 2 reviews the literature on causal attributions. It introduces the psychological concept of causal attribution and explains, after a discussion of the theory, the function of attributions in corporate communication with stakeholders. Subsequently, the empirical literature that investigates companies' attributions in the annual report is reviewed, leading to outlining the research gap within that stream of literature and the need for further research.

Chapter 3 discusses the determinants of attribution provision. The chapter develops a theoretical framework based on which the disclosure of performance explanations can be explained. The chapter first reviews relevant theories that the literature has put forward to explain the disclosure of causal attributions in corporate documents. Then, the chapter discusses factors which prior research has found to influence disclosure, and establishes hypotheses about how these factors influence

causal attribution provision.

Chapter 4 reviews the literature on disclosure and the cost of capital and develops the hypotheses regarding the effect of attribution statements on the cost of capital. First, the chapter reviews the theoretical literature on the link between disclosure and the cost of capital to establish the underlying theoretical foundation for the association between attribution statements and the cost of capital. Second, it reviews the empirical literature that has investigated the link between the cost of capital and disclosure and identifies the gap in current research. Third, it formulates hypotheses about the association of attribution statement disclosure and a firm's cost of equity capital.

Chapter 5 presents the research methodology and the methods used to carry out the analysis. The chapter starts with an outline of the research philosophy and the approach taken to analyse the research questions, followed by the development of the regression models. The discussion of the sample and sample selection process is followed by a presentation of the data collection methods, the data sources, and the measurement of variables. Finally, the data analysis process and techniques are presented.

Chapter 6 presents the descriptive analysis of the data. First, it describes the sample characteristics and the descriptive results for the cost of equity capital. Second, it presents the descriptive statistics for the attribution disclosure measure.

Chapter 7 reports the results of tests of the hypotheses on the influence of corporate governance and firm-specific characteristics on the disclosure of performance explanations in UK listed firms' annual reports. The chapter starts with a presentation of the regression model, and then describes the tests for normality of the data and any data transformations carried out prior to further analysis. Next, it presents the univariate correlations between the attribution disclosure measure and the independent variables, and then reports the results of the multiple regression analysis followed by additional tests of the data.

Chapter 8 reports the results of tests of the hypotheses regarding the effect of the provision of causal attribution statements on the cost of equity capital. The chapter

first presents the regression model and describes the tests for normality of the data and any data transformations carried out prior to further analysis. It then presents the results of the multiple regression analysis, followed by a number of additional tests.

Chapter 9 presents the conclusion. The chapter summarises the key findings and discusses the implications of the findings for accounting standard setters, regulators, and policy makers. The chapter also discusses the contribution and the limitations of the study, and provides suggestions for further research.

CHAPTER 2

REVIEW OF THE ATTRIBUTION LITERATURE

2.1 Introduction

In chapter 1, the research problem was identified as to investigate the determinants and consequences of attribution statements provided in the annual report of UK companies. To put the investigation into context, this chapter presents the concept of attribution and reviews the literature on attribution statements. The chapter is structured as follows. First, the definition of attribution is presented and the theory of attributions is outlined. The function of attributions in corporate communication with stakeholders is also discussed. Second, the empirical literature that investigates companies' attributions in the annual report is reviewed and the limitations identified. The chapter concludes with a summary.

2.2 The concept of attribution

2.2.1 Definition of causal attribution

Causal attributions are an important component of people's everyday life. The underlying concept is that the social environment surrounding individuals, which includes

other people's actions and behaviours, is unpredictable. Individuals therefore attempt to gain control over this environment by trying to predict other people's future behaviour or actions. This can be achieved by gaining causal understanding of others' behaviour, that is by understanding why a person behaved in a certain way (see Heider 1958; Hewstone 1990; Jones 1990; Taylor et al. 2000). Generally speaking, attributions are a psychological tool that helps individuals to understand and make sense of the environment (Harvey and Weary 1984).

When individuals experience an event or observe the behaviour of other people, they start engaging in the search for an explanation to identify a cause in order to make sense of what they have observed. This reasoning process results in assigning a cause which the individual, the attributor, perceives to be the reason for this event. Hence a causal attribution constitutes the assignment of a cause to an outcome (Kelley and Michela 1980; Harvey and Weary 1984; Martinko et al. 2007), and expresses an individual's perception of why something has happened (Lee et al. 2004).

The prevalence of causal attributions in people's lives has been highlighted by Heider (1976, p. 18) who has defined an attribution as "... part of our cognition of the environment. Whenever you cognize your environment, you will find attribution occurring". Against that backdrop, attributions are considered to "play a central role in human behaviour" (Kelley and Michela 1980, p. 460).

A cause can be classified along a number of dimensions which all reflect an individual's perception of different aspects of the nature of the cause. The attribution an individual gives to an event differs in response to the perception of the cause along these dimensions. The dimensions include *locus of causality* (is the cause internal or external to the individual), *controllability* (can the individual influence the cause or not), *causal stability* (is the cause temporary or permanent), *globality* and *universality* (is the cause generalisable across situations and individuals) and whether the outcome is positive or negative (Abramson et al. 1978; Weiner 1979; Ford 1985; Hewstone 1990; Rees et al. 2005). People act upon and react to what they perceive to be the reason for an outcome, hence attributions are important for shaping an individual's interaction with the environment (Kelley and Michela 1980).

2.2.2 The theory of attribution

Attribution theory is not one single theory but is an umbrella term that encompasses all types of research in social psychology on perceived causation and includes a multitude of theories and issues around how individuals perceive, interpret, and react to behaviour (Kelley and Michela 1980; Harvey and Weary 1984; Gilbert and Malone 1995). More precise, it can be said that attribution theory "is the area of psychology concerned with when and how people ask 'why?' questions" (Taylor et al. 2000, p. 76) and is a widely researched topic in social psychology (see, e.g. Kelley and Michela 1980, Harvey and Weary 1984, Mezulis et al. 2004 for reviews). The work by Heider (1958) has been credited in the literature as being precursory in the attribution area (see e.g. Kelley 1973; Martinko et al. 2007; Rudolph and Reisenzein 2008) as it describes how attributions arise from individuals trying to explain observed outcomes and to give meaning to other individuals' behaviour. The author also introduced the crucial distinction between internal causes for behaviour (for instance, effort and ability) or external causes (luck or other situational factors) (Hewstone 1990), and that individuals would attribute behaviour along these lines. A whole stream of research has built upon Heider's insights and has investigated individuals' attribution behaviour (Kelley 1973; Rudolph and Reisenzein 2008). Work by Jones and Davis (1965) and by Kelley (1967), Kelley (1971), Kelley (1973) is considered to be the chief contributions (Hewstone 1990) as they sought to develop models to explain how individuals would attribute.

The way individuals attribute causes to outcomes is subject to a number of biases. According to Hewstone (1990), three of the most crucial biases are the fundamental attribution error (e.g. Ross 1977; Harvey and Weary 1984; Gilbert and Malone 1995), the 'actor-observer effect' (Jones and Nisbett 1972), and the self-serving bias (see e.g. Miller 1976; Bradley 1978; Zuckerman 1979; Zuckerman 2006).

The 'fundamental attribution error' (e.g. Ross 1977; Harvey and Weary 1984; Gilbert and Malone 1995) is considered as "the tendency of attributors to underestimate the impact of situational factors and to overestimate the role of dispositional

factors" (Ross 1977, p. 184). According to this principle, individuals would tend to emphasise the effect of dispositional factors, that is personal or internal causes such as ability or effort, and discount the effect of situational, or external, factors such as luck or task difficulty.

The 'actor-observer effect' (Jones and Nisbett 1972; Kelley and Michela 1980; Hewstone 1990; Wagner III and Gooding 1997) suggests that if individuals observe another person's actions, the attributions the individuals will give to the other person's behaviour tend to differ from the attributions the individuals would give for their own behaviour. That is, when observing the actions of another person, individuals tend to discount this person's personal contribution to a successful outcome (e.g. ability or effort) and emphasise environmental factors as reason for the success (e.g. luck or task difficulty). By contrast, when attributing their own success, individuals would emphasise their own contribution and play down the influence of environmental factors. For failure, individuals as observers would discount environmental factors and emphasise the other person's personal responsibility, whereas if individuals attributed their own behaviour, failure would be blamed on external factors and the own personal responsibility would be discounted.

One of the most common biases is the self-serving bias in attributions (see e.g. Miller 1976; Bradley 1978; Zuckerman 1979; Zuckerman 2006). The literature argues that individuals perceive the causes for failure and success differently (Miller 1976; Kelley and Michela 1980; Wong and Weiner 1981). The self-serving bias shows that there is a tendency for individuals to attribute success to factors internal to oneself, or dispositional factors (Gooding and Kinicki 1995), such as ability or effort. This allows the individual to take credit and direct responsibility for achievements or good outcomes. By contrast, failure is usually seen as being due to factors external to the person, situational factors (Gooding and Kinicki 1995), such as luck or task difficulty. In this respect, the individual avoids blame for negative events or outcomes, thus responsibility is denied.

To explain this self-serving bias, two potential reasons have been brought forward by the literature. The first perspective suggests a motivational explanation, that

individuals give self-serving attributions deliberately (e.g. Bradley 1978; Zuckerman 1979). This may happen due to three reasons. First, in an attempt to protect the person's self-esteem (Bradley 1978; Zuckerman 1979; Bettman and Weitz 1983; Lee et al. 2004), by claiming success for themselves and denying responsibility for failure, individuals can improve or protect their self-esteem. Forsyth (1980) described this as the 'egocentric function'. Second, individuals give self-serving attributions for reasons of self-presentation, so as to avoid embarrassment or get their behaviour or actions approved by other people (Harvey and Weary 1984). Self-presentation is sometimes also referred to as 'impression management', defined as

"the process by which individuals attempt to control the impressions others form of them. Because the impressions people make on others have implications for how others perceive, evaluate, and treat them, as well as for their own views of themselves, people sometimes behave in ways that will create certain impressions in others' eyes" (Leary and Kowalski 1990, p. 34).

This implies that individuals attribute to convey a certain image of themselves in an attempt to direct or manipulate the way they are perceived by the environment.[1] Third, some studies have suggested that individuals engage in attribution behaviour in order to obtain a higher degree of control over the environment (e.g. Forsyth 1980; Harvey and Weary 1984). Kelley and Michela (1980) highlighted that attributions to controllable factors can increase the attributor's belief that goals can be reached by own efforts, thus increasing that person's confidence that the goal can be reached.

The second perspective for explaining the self-serving bias suggests that human cognition might be the reason (Wagner III and Gooding 1997). This literature argues that many people expect that their own efforts lead to success, or they are used to their actions resulting in successful outcomes. For that reason, they generally expect to be successful in their undertakings. If failure occurs despite own efforts, the perception of individuals is that external factors must have intervened, and these external factors prevented their own efforts from paying off and led to the failure. Responsibility for

[1]The notion of impression management plays an important role for attributions in corporate communication, as the following sections will show. For a discussion of different aspects of corporate impression management in narrative reporting in general, see Merkl-Davies and Brennan (2011).

failure is therefore denied and the cause is sought in external influences (Miller and Ross 1975; Huff and Schwenk 1990; Wagner III and Gooding 1997).

With regard to the consequences of causal attributions, they not only influence the attributor's perception of the social world, but also influence the reactions of his environment to these attributions (Kelley and Michela 1980). That is, the environment reacts to how an individual explains an outcome, and on that basis forms its attitudes towards, and perceptions and evaluations of, the attributor (Harvey and Weary 1984; Lee et al. 2004). Hence people's reaction to an attribution is influenced by the attribution itself. For instance, attributing a negative outcome to an external factor makes the attributor appear in a better light by reducing the perceived accountability of the attributor for the outcome (Lee et al. 2004). By contrast, for persons in positions of power or high status who are expected to have influence and control, making external attributions for failure violates these expectations and they are perceived negatively by others (Lee and Tiedens 2001).

2.2.3 Corporate use of causal attributions

The process of attributing a cause to an outcome constitutes not only a phenomenon observed with individuals, but can also be found in corporate communications. Organisations use causal attributions to explain their actions. Pfeffer (1981, p. 4) noted that an important part of the responsibilities of corporate management is "to provide explanations, rationalizations, and legitimation for the activities undertaken in the organization".

Explanations for performance outcomes can be considered a part of an overall corporate strategy to justify and legitimise the firm's operations to the public. Staw et al. (1983, p. 583) highlighted this point by arguing that since firms are under pressure to make best use of their input factors and to reach their stated objectives, "organizations will attempt to justify their performance when communicating or conveying information about their results". Pfeffer (1981) further stressed that these explanations intend to demonstrate that the firm acts within the values and expectations of society. Thus performance explanations can be seen as a response

to demands and pressure by the public on firms to account for and explain corporate activities and the way the firm is run.[2]

These causal attributions not only fulfil an informational role but also have a symbolic function (Aerts 2005) and go beyond providing accountability for past actions and performance. By explaining and justifying their actions, firms are trying to project an image that presents them as rational, competent, successful, and so to convince the public of their legitimacy (Staw et al. 1983; Aerts 1994). Salancik and Meindl (1984, p. 239) argued that causal attributions are also political statements meant to "reassure constituents or induce them, when necessary, to participate in the organization's affairs". In this context, managers may strategically use attributions to demonstrate that they are in control of the situation and the environment around the firm, and are able to deliver performance or demonstrate that they are tackling problems and negative influences. This can instil confidence among the public and investors, convince them of the capabilities of management to deliver results and the prospects of the firm, thus inducing new investors to get involved in the firm's affairs (Staw 1980; Pfeffer 1981; Staw et al. 1983; Aerts 2005).

Another important function of attributions is to act as a guide to outsiders' interpretation of the achieved results (Aerts 2005). Managers provide explanations and justifications to guide the public's perception and interpretation of the firm's actions from the perspective of the firm. Aerts (2005, p. 513) argued that "annual reports are a medium to place specifics of the annual accounts within a wider explanatory context", and further noted that the reports go beyond simply presenting information, as by providing explanations they also offer a means for how to interpret the information.

Thus he argued "by selectively directing and focusing attention, attribution processes can be powerful and flexible instruments to correct and supplement the message implied by negative performance characteristics or reinforce positive performance identities"(Aerts 2005, p. 515).

[2]Staw et al. (1983) and Bettman and Weitz (1983) highlighted that these attempts at justification and rationalisation are, at the same time, also directed internally at the firm's members.

2.3 Empirical studies on attributions in the annual report

Causal attributions in annual reports have received much attention in the area of management research. Studies can be grouped into three broad categories. First, studies that analyse the self-serving bias in attribution statements in annual reports and potential explanations for the bias (e.g. Bettman and Weitz 1983; Clatworthy and Jones 2003; Tessarolo et al. 2010). Second, some studies have examined the determinants of attribution statement provision (e.g. Aerts 1994; Aerts 2005; Luz et al. 2009). Third, other studies take a future-oriented perspective and investigate the consequences of the disclosure of causal attributions, for instance the association with future firm performance or the effect on the capital market (e.g. Staw et al. 1983; Lee et al. 2004). These studies are discussed in the following sections.

2.3.1 Studies analysing the self-serving bias

A number of studies has examined how factors such as performance, industry, or the overall economic environment determine the self-serving bias in annual reports. For instance, Bettman and Weitz (1983) investigated (1) whether self-serving attributions can be explained by impression management or a cognitive bias, and (2) the factors that determine the amount of causal reasoning by comparing years with good and bad economic conditions. They examined 181 letters to shareholders of US firms from four industries (metal mining, aerospace, scientific instruments, telecommunication) for both 1972 (as a good economic year) and 1974 (as a bad year), using an increase or decrease in Gross Domestic Product and stock price indexes as a measure for a good/bad year. Their findings show a tendency of firms to attribute negative outcomes more to external, unstable and uncontrollable causes, while positive outcomes tended to be attributed to internal, stable, and controllable causes. They also show that self-serving behaviour was more pronounced for the bad year (1974) than for the good year (1972). An industry effect was found, showing that metal mining

firms attributed both favourable and unfavourable outcomes to external causes to a greater extent than firms in the other three industries. Also, firms made the highest amount of attributions when their performance was worse than expected and mostly discussed negative outcomes. In addition, firms were found to talk more about unfavourable (favourable) outcomes when performance was worse than or as (better than) expected.

In a replication of the Bettman and Weitz (1983) study, Tsang (2002) use data from 147 companies listed on the Singapore Stock Exchange to investigate whether US evidence holds in a different cultural context. The results confirmed a self-serving pattern of attributions. Consistent with Bettman and Weitz (1983), the results show that firms gave more attributions when performance departs from expectations, when outcomes are unfavourable, and when outcomes are both unexpected and unfavourable. In addition, firms gave the highest amount of attributions when their performance was worse than expected and mostly discussed negative outcomes.

Clatworthy and Jones (2003) investigated whether UK firms with improving or declining performance show different attribution patterns. Using a sample of 100 Chairman's Statements of listed UK firms, they classified the content of the Chairman's Statement as good, bad, or neutral, and the attributions as internal or external. The results showed that firms with improving performance (positive change in profit before taxation from last year) presented more good news than bad performers were giving bad news, and they were more positive in their words than declining performers were negative. Performance attributions evidenced a self-serving pattern, with firms attributing good news to internal factors but bad news to the environment, irrespective of company performance. Moreover, in general firms were found to explicitly attribute bad news to external factors.

Recent evidence by Tessarolo et al. (2010) also confirmed the association of the self-serving pattern with firm performance in the Brazilian environment. They analysed letters to shareholders of 49 Brazilian companies listed on the Sao Paolo Stock Exchange. For each company, both from a good (2003) and bad (2002) economic year (measured as increase/decrease in per capita GDP and stock index). Perfor-

mance was measured as net income, and attributions were coded as causes (internal/external) and effect on performance (good/bad). The authors found that 90% of good (83.3% of bad) performance was attributed to internal (external) causes, suggesting that managers attribute good performance to themselves and bad performance to external factors. Moreover, they found that the highest proportion of self-serving attributions in the letters occurred in the case of bad performance in a bad economic year, but that the level of self-serving attributions by firms with good performance in a bad year did not significantly differ from firms with positive (and negative) performance in a good year.

Hooghiemstra (2008) compared letters to shareholders issued by 50 US and 50 Japanese firms in the period of 1994-2000. Two reports per firm were chosen to represent both a good and bad economic year, taking the positive/negative change in net sales margin and return on assets (ROA) as a measure of good/bad year. The results showed that, in general, both countries' firms provided more attributions for good outcomes than for bad. However, US firms stressed positive outcomes much more than Japanese firms. For both countries, the self-serving bias was confirmed, with a higher amount of internal (external) attributions for good (bad) performance.

Huff and Schwenk (1990) analysed speeches by Chrysler executives over a 15-year period (1970-1984) and of four major oil companies over a 16-year period (1969-1984), during times of performance increases and decreases. For Chrysler, the results showed that more speeches were given in a good year than in a bad year. Also, more attributions were given to external factors in a bad year, and more to internal factors in a good year. For the oil firms, the proportion of internal and external attributions statements did not differ between good and bad years, but there was significantly more talk about the environment in a bad year.

To sum up, the findings of these studies suggest that firms have a tendency to attribute causes to performance in a self-serving way, which is influenced by factors such as financial performance, the overall economic environment, or industry membership.

2.3.2 Studies analysing the determinants of attribution statement provision

Studies have also investigated the determinants of attribution statement provision to performance outcomes. Salancik and Meindl (1984) argued that firms with unstable performance lack control over their outcomes thus will try to create an image of control by taking more responsibility even for negative events (compared to firms with stable performance). Analysing letters to shareholders of 18 US companies over an 18 year period from 1961-1978, the authors found that unstable firms attributed positive outcomes more to internal factors than did stable companies, and unstable firms blamed external factors for negative outcomes less than did stable firms. They also found a positive relation between taking credit for positive outcomes and future performance in the case of unstable firms. By contrast, accepting blame for negative outcomes was found to be negatively related to future performance, for both stable and unstable companies.

Clapham and Schwenk (1991) investigated the relation of attributions with company performance and whether the higher monitoring and scrutiny by regulatory bodies in regulated industries might moderate the self-serving tendency as compared to firms in unregulated industries. Examining letters to shareholders of 20 US electric and gas utility firms between 1978-1982, the authors reported the existence of a self-serving bias. Regarding performance, claiming internal reasons for success was negatively associated with future performance, but there was a positive association with taking blame for negative outcomes. Future EPS growth had a negative relation with defensiveness.

Aerts (1994) explored the influence of firm characteristics on 'accounting bias': that good performance is explained by verbal causal explanations, but bad performance is explained by more formal and impersonal accounting language and technical terms. Examining the Reports of the Board of Directors of 50 Belgian firms from the year 1983, attributions were coded according to four categories: internal/external, positive/negative effect for the firm, and whether (1) the explanation and (2) cause

or effect are expressed in technical-accounting terms or not. The results showed evidence of self-serving bias and the 'accounting bias'. Firms used accounting language to explain negative outcomes, but gave clear verbal cause-effect relationship explanations for positive outcomes. However, this pattern could only be found for firms with stable performance, but not for those with unstable performance. Aerts (1994) also examined the factors influencing attribution behaviour. First, the results demonstrated that listing status influences assertiveness (giving internal causes for positive performance), with listed firms explaining positive accounting outcomes more with verbal explanations than unlisted firms. Second, performance stability influenced defensive (giving external causes for negative performance) accounting explanations, which were found significantly more often in stable than in unstable firms. Finally, profitability and firm size did not have a significant impact.

Aerts (2005) compared listed and unlisted companies to explore the reasons for the self-serving tendencies in attributions, arguing that listed firms are more prone to impression management due to higher levels of accountability and public scrutiny. In addition, the study analysed how attributions are influenced by (1) the characteristics of the content of the attributed outcomes, (2) improving (declining) performance, (3) several additional firm characteristics. Using a matched sample of Directors Reports of 72 unlisted and 95 listed Belgian companies from the year 1997, the explained effects were coded according to: nature (to which financial performance measure), time orientation (past/present/future year), valence of the effect (negative/positive), expression (quantitative/qualitative), and organisational level. The results showed that listed firms gave more attributions than unlisted firms (for both improving and declining performance), and were more defensive (giving external causes for negative performance) in their attributions when the performance outcomes were negative. In addition, the results showed a negative association between defensive behaviour and firm size, but positive with listing status and industry type. Self-acclaiming behaviour showed a positive association with declining firm performance and with firm size.

In a more recent study, Aerts and Cheng (2011) investigated the association between earnings management and certain company characteristics and the disclo-

sure of explanations to earnings-related outcomes in the Management and Discussion (MD&A) section of a sample of 104 Chinese Initial Public Offering (IPO) prospectuses. The authors suggested that causal explanations might be used to legitimise earnings outcomes. Causal explanations were classified into the same categories as in Aerts (2005) and aggregated to form two variables to measure assertiveness in attributions (attributing positive outcomes more to internal reasons) and defensiveness (attributing negative outcomes more to external reasons). The results confirmed the self-serving bias, and that pre-IPO earnings management practices were associated with self-serving attribution behaviour in the IPO prospectuses. In addition, firms with a positive change in profitability were found to be significantly more (less) assertive (defensive) in their attribution behaviour. Profitable firms were also significantly less defensive.

Baginski et al. (2008) compared a sample of 2437 interim and annual management earnings forecasts from two periods (1983-1986 and 1993-1996) and documented an increase in external attribution provision over time. Internal attribution provision did not change significantly. An analysis of determinants of external attributions for the full sample covering both periods showed that giving more external attributions was associated with firms that are larger, have smaller ranked absolute unexpected earnings in the management forecast, and report bad news (negative unexpected earnings).

While a number of studies that have examined the determinants of attribution statement provision have tended to focus on firm-specific and market-related factors such as profitability, firm size, and listing status (e.g. Aerts 1994; Aerts 2005; Aerts and Cheng 2011; Baginski et al. 2008), only few studies have analysed the influence of corporate governance on attribution provision. Staw et al. (1983) compared high and low performing firms and explored (1) differences in attribution behaviour between the two groups, (2) whether the type of news contained in the letter to shareholders (good or bad) influences the type of attributions provided, (3) situational and personal determinants of attribution provision. Employing a sample of letters to shareholders of 49 extremely high and 32 extremely low performing US companies in the year

1977, the authors did not find significant differences in attributions between high and low performers. The results also revealed that organisational performance was not a strong determinant of attributions, neither were personal variables of the CEO such as salary, age and tenure. Institutional ownership was also insignificant.

Luz et al. (2009) explicitly investigated the association of self-serving attributions with the strength of corporate governance for the Brazilian environment. They argued that firms with better governance should show less bias in their attribution behaviour. Using a sample of 385 management reports for the year 2006, the authors demonstrated that the occurrence of self-serving bias among firms did not differ with governance standards; but showed that firms with better governance were more likely to attribute good outcomes to internal reasons. No difference was found in the percentage of the total report given to attribution statements between firms with better governance and the other firms.

Aerts and Tarca (2010) examined how attribution statement provision is influenced by certain company characteristics and corporate governance factors. They examined 172 Management Commentaries of firms in five industries from Canada, the US, the UK and Australia. The results revealed that analyst following has a positive association with the absolute amount of attributions provided, whereas a firm's market-to-book value has a significant negative association. Change in profitability showed a positive association with the number of explanations provided per performance outcome. However, no significant relationship between corporate governance structure and attribution behaviour was found.

A recent study by Aerts and Cheng (2012), using the same sample of Chinese IPOs as in Aerts and Cheng (2011), analysed how the firm's ownership influences assertive or defensive behaviour in the performance explanations in the IPO prospectuses. Ownership was measured as (1) retention of ownership by CEO and other pre-IPO shareholders after the IPO, (2) a dummy variable taking the value of 1 if firm is state-controlled, 0 otherwise. No significant influence of these variables on attribution behaviour was found, only a marginal effect of ownership on the amount and bias of assertiveness in explanations.

Taken together, the studies on the determinants of attribution statement provision found evidence for an influence of firm-specific factors such as profitability, firms size, or listing status, but could not find evidence for a strong role of a firm's corporate governance.

2.3.3 Studies analysing the consequences of attribution statement provision

In addition to exploring the determinants of attribution behaviour, some studies analysed the potential effects of attribution statements. These studies examined an association of attribution statements with stock price increases (e.g. Staw et al. 1983; Lee et al. 2004), stock price reactions (e.g. Baginski et al. 2000; Baginski et al. 2004; Kimbrough and Wang 2009), stock valuations and earnings forecasts (Barton and Mercer 2005), and Initial Public Offering (IPO) price valuation and first-day trading returns (Aerts and Cheng 2012).

In addition to analysing the determinants of attributions in the letter to shareholders as discussed in the previous section, Staw et al. (1983) also compared high and low performing firms and analysed the effect of attributions on the firm's share price after publication of the report. Employing a sample of letters to shareholders of extremely high and low performing US companies in the year 1977, the authors showed that for both good and bad performing firms, there was a positive association between internal attributions and stock price. Moreover, the greater the degree of self-enhancement in the attributions, the higher the increase in share price in the month after the publication of the annual report.

Lee et al. (2004) investigated whether performance attributions may predict future share prices. The authors hypothesised that the public expects firms to be in control of their performance outcomes, thus companies that blame external factors for negative events may violate these expectations, leading to negative impressions of the firm and subsequently worse stock price performance. Analysing letters to shareholders of 14 US companies in three industries (pharmaceuticals, food and beverage, industrial

equipment) during a 21-year period (1975-1995), the authors found that firms which made self-disserving attributions had higher stock prices one year later. Attributions to positive outcomes had no association with stock prices.

Aerts and Cheng (2012) found that causal explanations are associated with IPO offer price valuation and subsequent first trading day returns. They argued that assertive explanations will have positive consequences for IPO valuation, while defensive explanations will have negative consequences. Analysing the same sample of Chinese IPOs as in Aerts and Cheng (2011), the authors found a strong self-serving tendency in the attribution statements. IPO price valuation had a significant positive relationship with assertiveness of explanations, while the association of assertiveness with first-day underpricing (the initial return after the first trading day relative to offer price) was negative. Defensiveness of explanations showed a negative relation with IPO price valuation.

In addition to the studies reviewed above, there is also a limited number of studies that have examined the association of causal attributions with stock price reactions and the cost of capital. Baginski et al. (2000) examined whether attribution statements in management earnings forecasts provide credible information to investors. They explored three issues: (1) when attributions are given (when forecast news is good or bad), (2) whether they are biased (what type of attribution is given for good/bad news), (3) whether stock prices respond to the existence of attribution to test whether attributions are seen as credible by investors. Their analysis considered 2085 US quarterly and annual management earnings forecasts for the period of 1983-1986. The results demonstrated that more attributions were given for bad news, and those were more often explained by external factors. Moreover, the analysis provided evidence for the value relevance of attributions by showing that the stock price reaction to unexpected earnings was stronger when the forecasts contained attributions. This effect of attribution presence was found for both internal and external attributions. The authors considered this as evidence that the credibility or precision of management forecasts can be increased by giving attributions.

Baginski et al. (2004) extended the Baginski et al. (2000) study and explored

in more detail the determinants of providing attributions in voluntary management forecasts as well as stock price responses to forecasts containing attributions. They used a sample of 951 US interim and annual management earnings forecasts for the period of 1993 to 1996. The results revealed that attributions were given more often when earnings news was bad, and that bigger firms gave more attributions whereas firms in regulated industries gave less. They also showed that external attributions are more likely for larger firms and when the deviation from prior earnings expectation is smaller. By contrast, the results showed that internal attributions were more likely for larger deviations from earnings expectations, and for good earnings news. Further, the authors demonstrated a positive association between attributions and absolute security price changes. Also, attribution presence was associated with negative price reactions and an enhanced price reaction per dollar of unexpected earnings. The authors found that the effect of attributions on stock price reactions was due to a reaction to the existence of external attributions, whereas internal attributions were insignificant.

Baginski et al. (2008) also found in their comparison of 2437 interim and annual management earnings forecasts containing attribution statements from two periods (1983-1986 and 1993-1996) that stock price reactions around the announcement were stronger for forecasts given in the later period, and such responses only held for firms covered by analysts.

Kimbrough and Wang (2009) extended the Baginski et al. (2004) study by arguing that investors' reaction to self-serving attributions depends on the attributions' plausibility. Plausibility was measured as (1) concurrent industry performance and (2) the commonality of the earnings with industry and market earnings (firm ROA compared to industry ROA). Based on a sample of 1790 quarterly earnings announcements by 98 firms during 1999-2005, the authors demonstrated that enhancing (defensive) attributions are associated with higher (less negative) abnormal stock returns for positive (negative) earnings surprises. For the subsample of announcements containing self-serving attributions, defensive attributions were related to a less negative market reaction to bad news when the majority of the firms in the same industry also reported

bad news, and when commonality of the firm's earnings with the industry and the market was higher. Further, enhancing attributions were related to higher abnormal returns to good news when the majority of the firms in the same industry reported bad news and when commonality of the firm's earnings with the industry and the market was lower.

Barton and Mercer (2005) conducted an experiment with 124 financial analysts to investigate the valuation implications of performance explanations. The authors demonstrated that analysts that received a plausible (implausible) explanation for bad performance believed that this performance was less (more) likely to persist than the analysts in the control condition (who did not receive an explanation). Earnings per share forecasts and stock valuations were significantly higher (lower) for plausible (implausible) explanations than if no explanation was given. In addition, analysts that received an implausible explanation assessed management's reputation lower than the analysts in the control group, while plausible explanations showed no positive effect on analysts' assessment. Earnings valuation multiples, which the authors used as a proxy for the cost of capital, were lower for implausible explanations than for the control group, but plausible explanations had no effect. The authors concluded that plausibility affects management's reputation, thus its credibility in communicating with the capital markets. Changes in this reputation will impact on a company's information risk, which eventually affects the cost of capital.

2.4 Limitations of previous research and the need for further research

Although the studies discussed above have provided useful insights into attributions in terms of the extent and nature, determinants (e.g. Bettman and Weitz 1983; Staw et al. 1983) and consequences (e.g. Baginski et al. 2000; Baginski et al. 2004; Barton and Mercer 2005), the studies have some limitations to warrant further research on the topic.

First, prior studies have tended to focus mostly on exploring the motivations

behind the self-serving bias (i.e. impression management or cognitive bias), analysing situations which facilitate to discern the different explanations, such as comparing firms with good or bad performance (e.g. Bettman and Weitz 1983; Staw et al. 1983; Clatworthy and Jones 2003). Only a few studies (e.g. Staw et al. 1983; Aerts 2005; Aerts and Tarca 2010) have examined the determinants of attribution disclosure. However, these few studies have mostly focused on how specific aspects of attributions (e.g. the attribution bias, or assertiveness/defensiveness of attributions) are influenced by certain factors such as firm performance (e.g. Clatworthy and Jones 2003; Tessarolo et al. 2010; Aerts and Tarca 2010). Hence previous research has not examined the determinants of the overall level of attribution statement disclosure and most have tended to focus on examining performance, firm size and listing status as determinants of attributions.

Second, only four studies could be identified that have analysed the influence of corporate governance factors on attribution type and amount (Staw et al. 1983; Aerts and Tarca 2010; Luz et al. 2009; Aerts and Cheng 2012). However, the range of corporate governance mechanisms considered is very limited. For example, the only mechanism Staw et al. (1983) examined was institutional ownership, while Aerts and Cheng (2012) explored the role of CEO ownership and whether a firm is government controlled in the special situation of an IPO in a Chinese setting. No identifiable study has examined board structure variables, including the role of the audit committee, which is the key corporate governance mechanism for overseeing financial reporting (Keasey and Wright 1993; Blue Ribbon Committee 1999; Smith Committee 2003; Mangena and Pike 2005; FRC 2010b). Aerts and Tarca (2010) and Luz et al. (2009) analyse the firm's overall corporate governance quality so that the effect of individual corporate governance mechanisms is unknown. Analysing the effects of individual corporate governance factors is important compared to composite factors with respect to financial reporting. A composite measure includes mechanisms that are not directly responsible for the financial reporting oversight, for example nomination committees or remuneration committees, and therefore dilute the effects observed. As previous research has demonstrated, individual corporate governance mechanisms (e.g. non-

executive directors, audit committee size) can influence disclosure (see e.g. Chen and Jaggi 2000; Eng and Mak 2003; Mangena and Pike 2005; Mangena and Tauringana 2007; Patelli and Prencipe 2007). This study fills in this gap by investigating the relationship between attributions and individual corporate governance factors.

With respect to the consequences of attributions, there is some insight on the effects of attributions on stock prices, but very limited evidence on the effects on the cost of capital. The only studies to examine the value relevance of attributions examined management earnings forecasts (Baginski et al. 2000; Baginski et al. 2004; Baginski et al. 2008; Kimbrough and Wang 2009). As these studies noted, attributions in voluntary management earnings forecasts are distinctively different from attributions in a Management Commentary in the annual report, since they are not prescribed, are not related to audited information, and there is no regulation regarding form or content. This implies that attributions in annual reports are different since they relate to the audited accounts, and there are requirements for companies to provide explanatory factors for their performance to aid users see the results through the eyes of management. For example, the Companies Act (2006) requires directors to include an explanation of factors influencing performance in the Business Review. The UK Corporate Governance Code (FRC 2010b) also recommends that the board should provide in their review explanations of the key factors influencing performance.

Also, Baginski et al. (2000), Baginski et al. (2004), Baginski et al. (2008) and Kimbrough and Wang (2009) have focused on stock price reactions using an event study method, thus have not examined the cost of capital effect. Barton and Mercer (2005) argue that attribution statements have an effect on the cost of capital and call for further research on the issue to understand the long-term effects of reputation effects which last longer than a short-term reaction to disclosure. Therefore, this study analyses the cost of capital effects of attribution statements.

Finally, and more important for this study, most of the studies, especially on the consequences of attribution statements, are US based. Clatworthy and Jones (2003) and Aerts and Tarca (2010) are the only two studies that have examined the UK context, but these do not examine the effects of corporate governance factors on

attributions, neither do they examine the cost of capital effects of attribution statements. As Clatworthy and Jones (2003) argue, the US results cannot be generalised to the UK setting because the financial reporting environments are different. The US financial reporting is more prescriptive whilst the UK is more discretionary. Also, in the US, litigation is prevalent, whilst in the UK it is limited, so that companies in the US may be limited in their attribution behaviour compared to those in the UK.

2.5 Summary

This chapter has reviewed the literature on attribution disclosures. While there is a large body of existing research, many studies have investigated the self-serving bias in attribution statements and much less attention has been given to determinants or consequences of attribution statements. Of these few studies that have analysed the determinants of attribution statement disclosure, the studies have tended to focus on the qualitative characteristics of attributions rather than on the extensiveness of attribution disclosure and the type (internal/external). In particular, not much is known about how corporate governance mechanisms influence attribution disclosure. Regarding the economic consequences of attribution statements, existing research has mainly focused on short-term market reactions to their announcement, thus has not analysed a longer term cost of equity capital effect. To date, no quantified impact of attribution statements on the cost of capital based on an estimation of the cost of equity capital has been provided.

Based on this review, it can therefore be concluded that this thesis can contribute to the body of knowledge in two ways: First, by exploring in detail the determinants of the extensiveness and the type (internal or external) of attribution disclosure with special regard to the influence of corporate governance factors. Second, by investigating the cost of capital effects of causal attribution statements by explicitly estimating the cost of equity capital to provide a quantification of the effect.

CHAPTER 3

DETERMINANTS OF ATTRIBUTION DISCLOSURE: THEORY AND HYPOTHESES

3.1 Introduction

In chapter 1, one of the objectives of this research was specified as to investigate the determinants of attribution disclosure. Chapter 2 reviewed the literature investigating attribution statements, including some of the determinants of attributions. In this chapter, the hypotheses that are tested in the study to address the above objective are developed. The chapter is organised as follows. The first part develops a theoretical framework to explain the disclosure of attribution statements based on a review of relevant theories that the literature has put forward to explain the disclosure of causal attributions in corporate documents. The second part builds on the theories supported by studies reviewed in the previous chapter and other disclosure studies to develop hypotheses about how these factors influence causal attribution disclosure. The chapter concludes with a summary.

3.2 Theories of voluntary disclosure

The literature provides a number of theories by which a firm's disclosure policy might be explained (see Merkl-Davies et al. 2007 and Beyer et al. 2010 for a review). These include agency theory (e.g. Jensen and Meckling 1976; Staw et al. 1983; Aerts 2005), signalling theory (e.g., Salancik and Meindl 1984; Aerts 2005), capital needs theory (e.g., Lang and Lundholm 1993; Gray, Meek and Roberts 1995; Lang and Lundholm 2000; Baginski et al. 2000; Baginski et al. 2004), and proprietary costs theory (e.g., Verrecchia 1983; Dye 1985; Hayes and Lundholm 1996). These theories are discussed in the following sections.

3.2.1 Agency theory

Agency theory deals with the problems arising from the separation of ownership and control in companies. In their classical paper, Jensen and Meckling (1976) described the problems arising in this relationship: The principals (owners) of the firm hire an agent (manager) in order to run the business on their behalf and in their interest. As the agent's interest may be diverging from that of the owners, the business is not necessarily run in the best interest of the owners but in that of the manager. The manager has incentives to use the owners' funds as perquisites, such as high compensation or other benefits, or undertake projects and investments which may not necessarily be in the best interest of the owners of maximising firm value (Jensen and Meckling 1976; Fama 1980). The principals, therefore, have to incur costs to control their agent, which are referred to as agency costs. These include the principal's costs incurred for monitoring the agent, or the agent's bonding costs which are expenses by the agent to reassure the owners of the proper use of the funds, for instance an independent audit. Moreover, there are also the principal's residual losses that stem from the agent taking decisions which do not maximise the owner's 'welfare', or bankruptcy costs. These agency costs have a negative effect on firm value as investors take agency costs into account in their stock valuation (Jensen and Meckling 1976; Lev 1992).

To deal with these agency problems a number of mechanisms are in place, both internal as well as external to the firm, to protect the interests of the providers of finance. Firm-internal mechanisms include institutional systems such as accounting, or mutual monitoring by managers and the firm-internal labour market (Alchian and Demsetz 1972; Fama 1980; Fama and Jensen 1983). The board of directors is considered by Fama and Jensen (1983) as the apex of the mechanisms to control managers' decisions. Shareholders delegate their control to the board, which monitors management on their behalf and assures shareholders' interests are protected and thereby reduces agency costs (Fama and Jensen 1983; Schaffer 2002). The board therefore plays a major role in overseeing and controlling financial reporting (FRC 2010b). As performance explanations are an important component of financial reporting to the capital market (Smith Committee 2003; Barton and Mercer 2005), this suggests that the board's oversight extends to management's explanations for performance outcomes, thus the provision of attribution statements.

External mechanisms to control management's actions can be the divestment of shares on the stock market if shareholders are not satisfied, the market for corporate control and takeovers to put pressure on underperforming management, or the managerial labour market that uses firm performance to judge managers' market value (Alchian and Demsetz 1972; Jensen and Meckling 1976; Fama 1980; Fama and Jensen 1983).

As has been pointed out above, the agency problem can have negative effects on firm value. One way of reducing the agency problem and the negative capital market effects is by increasing information disclosure (see e.g. Lev 1988; Verrecchia 2001; Bartov et al. 2005).[1] Since managers have more information about the firm and its performance than the owners, the owners will have strong interest in controlling management to ensure their investments are put to best use. This creates agency costs. If, however, investors receive more information about the firm, they can better ascertain that management does not misappropriate their funds, which then may

[1]This is linked to the issue of information asymmetry. Information asymmetry occurs when one capital market participant has more information about the value of an asset than the other. For a discussion of information asymmetry and its implications see the next section 2.2.

reduce the need for strong agency mechanisms. This may lead to reduced agency costs and beneficial effects on firm value as investors will have less need to protect themselves via assessing a lower share price.[2] An important role in this process can be accorded to the disclosure of explanations for corporate performance outcomes. As only management can provide the reasons for the achieved performance, disclosing this information to the market can enable investors to better judge the sustainability of firm performance and so increase investors' confidence in their estimates of future returns. Moreover, as "... there are strong norms for organizations to make efficient use of resources and to achieve their goals ..." (Staw et al. 1983, p. 584), management uses attributions to justify or legitimise corporate performance (Staw et al. 1983; Aerts 1994). Management may use performance explanations to demonstrate that they served shareholders' interest well, which may reduce investors' fears of suboptimal or misuse of their funds. Moreover, negative performance may cause conflicts of interest between owners and managers, so that management may recur to impression management[3] to influence perceptions of the outsiders (Merkl-Davies et al. 2007). Firms may blame external factors to deny responsibility, whereas for good outcomes firms may emphasise internal strengths and capabilities to foster confidence in the future of the firm. To sum up, agency conflicts and information asymmetry can be considered a major driver of attribution disclosure.

3.2.2 Signalling theory

Signalling theory is linked to the concept of information asymmetry (see Spence 1973). Information asymmetry arises if one party has more information about the quality and value of a good than the counterparty. An investor interested in buying a firm's shares faces an adverse selection problem as the seller may have better information about the value and the future prospects of the firm (Lev 1988; Verrecchia 2001). Hence the investor cannot be certain if the price paid for the shares appropriately reflects the underlying value or is too high. If investors cannot distinguish between good and bad

[2] See chapter 4, section 2 for a discussion of potential benefits of increased disclosure.
[3] See chapter 2, section 3.1.

investments, they will undervalue good opportunities and overvalue bad opportunities, resulting in an average valuation level (Healy and Palepu 2001), thus a misvaluation of companies.[4] Information asymmetry therefore has direct negative implications for firm value by increasing investors' required rate of return, thus the cost of equity capital.

To overcome this problem, firms with good performance can send signals to the market to distinguish themselves from others and point out their superiority.[5]

One way for firms to signal their superiority to the market is through the disclosure of information (Gonedes 1978; Gray, Meek and Roberts 1995; Aerts 2005). The literature suggests that a better performing firm will signal this to the market by disclosing more information (e.g. Singhvi and Desai 1971; Cooke 1989; Wallace et al. 1994; Wallace and Naser 1995). More information allows investors to better judge the prospects of a firm and to distinguish between good and bad investments. Firms with good performance have an incentive to provide more information to elaborate on their success and present themselves in a positive light, distinguishing them from worse performing firms. This can contribute to convincing investors of their superiority and good future prospects, thus help the firm to attract capital at more favourable terms and lower its cost of capital. By contrast, bad performing firms may not have an incentive to elaborate on their poor performance as there is not much to boast. However, not signalling does not automatically imply bad news, disclosure costs may lead firms to not disclose, even though non-disclosure may be perceived negatively by the market (Spence 1973; Verrecchia 1983). Disclosure costs can include direct costs such as those for gathering and preparing information or indirect costs such

[4] If eventually information asymmetries are very high, uninformed market participants will refuse to trade stocks under this condition or completely leave the market (Lev 1988). Akerlof (1970) showed that this may eventually lead to a market breakdown, a situation when no more trade occurs because due to information asymmetry market participants cannot be sure whether they obtain a good or a bad quality product.

[5] Spence (1973) and Spence (2002) illustrated the signalling of superiority using a job market analogy. As an employer cannot observe certain attributes of job candidates and how they will perform in their tasks, thus cannot distinguish between better and worse candidates, the employer will pay an average wage leaving the more productive employees with a lower wage than they could achieve. In order to distinguish themselves, more productive candidates would signal their superiority to the prospective employer by means of a higher education that separates them from lower productivity candidates. From these considerations follows that signals about quality and value can reduce information asymmetry and allow to distinguish between good and bad performers.

as proprietary costs, that is revealing valuable information to competitors (see e.g. Hayes and Lundholm 1996; Leuz and Wysocki 2006).[6] In this context, firms will compare the benefits and costs of disclosure, and disclose information if the benefits outweigh the costs (Healy and Palepu 2001; Verrecchia 2001). Thus the existence of these costs makes it more difficult for investors to judge whether the non-disclosed information is negative or not (Verrecchia 1983).

Explaining financial performance outcomes is a means of sending signals about performance. Aerts (2005, p. 497) argued that positive performance is "a powerful signal of managerial competence". In this case, firms may be inclined to signal this by elaborating on their superiority. Against the background of the self-serving bias in attributions, emphasising internal strengths and capabilities as the reasons for success may positively influence the market's perception of the firm and its management, and reassure investors of the good prospects of the firm. In return, when performance is bad, firms may provide fewer explanations so as not to alert the market to any shortcomings and spread uncertainty among investors.

On the other hand, Salancik and Meindl (1984) found evidence that firms with unstable financial performance over time take responsibility for both positive and negative performance more than stable firms do. That is, management takes blame for bad outcomes to signal to the public that they are in control of the situation and measures to address the problem have been taken. Doing so may be seen by investors as a sign that all is under control.

3.2.3 Capital needs theory

Similar to signalling theory, firms compete in the capital market to attract investors, and investors need information to make decisions about their capital allocation (see Meek et al. 1995). Investors allocate capital to the investment opportunities that maximise their expected utility (Sterling 1972; Scott 2009), and the purpose of financial reporting is to provide information that makes this decision-making easier (Beaver et al. 1968; IASB 2005). Information asymmetry between management and

[6] See section 2.4 of this chapter for a discussion of proprietary costs.

the market impedes a fair pricing of the firm and can lead to a higher required rate of return (Lev 1992; Healy and Palepu 2001; Verrecchia 2001). Hence firms relying on the capital market for financing have incentives to provide information beyond the mandatory minimum to reduce information asymmetry in order to increase demand for their shares and to secure capital at the best possible terms (Cooke 1989; Meek et al. 1995).

Theoretical research provides support for the notion that more disclosure can reduce information asymmetry.[7] Empirically, the literature has documented various capital market benefits for firms providing higher disclosure, such as higher liquidity of the shares (e.g. Welker 1995), a lower cost of capital (e.g. Botosan 1997; Mangena et al. 2010) and a lower cost of issuing debt (Sengupta 1998). These findings provide support for the notion that firms may recur to voluntary disclosure in order to attract capital at more favourable terms. In particular, firms intending to raise money in the capital market have incentives to increase voluntary disclosure prior to the share offering so as to maximise the proceeds by lowering the cost of capital (Choi 1973; Cooke 1989; Lang and Lundholm 1993; Healy and Palepu 2001). And indeed, the literature found evidence for a tendency that firms increase their voluntary disclosures when they intend to access the capital market (Choi 1973; Gibbins et al. 1990; Lang and Lundholm 1993; Frankel et al. 1995; Lang and Lundholm 2000).

Against this background, the provision of performance explanations given from management's perspective can play an important role as they can give investors an insight they could not get from other sources (Cole and Jones 2005). By setting the financial statements into context, such explanations provide investors with a better understanding of which factors influenced performance and whether these are likely to persist (Cole and Jones 2005). The resulting reduced information asymmetry can therefore help investors to price shares more accurately and lower the required rate of return. On that basis, it can be argued that firms have an incentive to provide more performance explanations in order to reduce information asymmetry and to obtain capital at better terms. In particular, firms intending to raise capital may have

[7] This literature is discussed in chapter 4, section 2.

incentives to provide more performance explanations to reduce the cost of capital.

3.2.4 Proprietary costs theory

There is consensus in the literature that concerns of supplying competitors with valuable information keep firms from disclosing proprietary information (Verrecchia 1983; Dye 1985; Dye 1986; Gibbins et al. 1990). According to Verrecchia (2001), proprietary costs are one of the main reasons for nondisclosure, even if withholding information may be perceived negatively by the capital market. On the other hand, when industry entry costs are low, the incumbent firm has incentives to disclose information in order to deter potential competitors (Darrough and Stoughton 1990; Wagenhofer 1990). Nondisclosure may cause proprietary costs by attracting new entrants into the industry, whereas releasing negative information about the industry's profits and prospects may deter entry of competitors and thus eliminate proprietary costs (Dye 2001). Hayes and Lundholm (1996) and Palepu et al. (2003) argued that firms take threats to their own competitiveness and rivals' reactions into consideration when deciding on the level of aggregation of segment results in their disclosures. So the intensity of competition and the associated costs of disclosing proprietary information may influence a firm's decision of how much information to provide so as not to weaken its competitive position.

The association of proprietary costs and disclosure is of particular relevance for causal attributions. Explaining why performance was particularly good or bad might reveal why the firm is so profitable or which industry is particularly lucrative. The firm may therefore decide not to reveal such information so as not to alert and attract competitors. For non-profitable firms, explaining why performance was bad or fell short of expectations may also constitute proprietary information and provide competitors with an edge. For instance, explaining a shortfall in profit with problems in the development of a new product due to cost overruns or sourcing problems may give competitors an indication of when a new product may come to market, or whether it will be launched at all. Competitors could adjust their strategies to exploit this delay and try and boost their own sales and gain market share. Similarly, explanations

such as problems with internal control or inventory systems can give competitors an indication of the firm's internal processes, thus are valuable information. Against this background, proprietary cost considerations may lead both profitable and non-profitable firms to be cautious in providing detailed explanations for their performance outcomes, despite market expectations and potential negative implications for firm value.

3.3 Factors influencing causal attribution disclosure: Hypotheses development

Having discussed in the previous section the key theories that may explain corporate attribution disclosure, this section now develops hypotheses of the relationship between attribution disclosure and corporate governance and firm-specific factors.

3.3.1 Corporate governance

John and Senbet (1998, p. 372) suggest that corporate governance "deals with mechanisms by which stakeholders of a corporation exercise control over corporate insiders and management such that their interests are protected". This means corporate governance is the mechanism by which stakeholders reduce agency and information asymmetry problems via the monitoring of management performance, and ensuring that managers are accountable to shareholders and other stakeholders. These governance mechanisms are both internal and external (Fama 1980; Fama and Jensen 1983; Williamson 1984; Shleifer and Vishny 1986). The key internal mechanisms are ownership structure and the board of directors (Brown et al. 2011), with the board of directors considered to be the apex of the internal control system (Fama and Jensen 1983). The board of directors is delegated by the shareholders to monitor management. External control mechanisms consist of the stock market, the market for takeovers, regulation and enforcement, or the managers' labour market (see Fama 1980; Fama and Jensen 1983; Vafeas 2003; Brown et al. 2011). Both internal

and external governance mechanisms contribute to reducing agency and information asymmetry problems.

The focus in this thesis is the internal governance mechanisms. Forker (1992) argues that the introduction of internal corporate governance mechanisms, particularly the board of directors, improves monitoring and reduces the benefits management derives from withholding information. The board of directors is responsible for monitoring managerial performance in general (Jensen 1993; Karamanou and Vafeas 2005), and in particular, the financial reporting processes (Karamanou and Vafeas 2005; Mangena and Pike 2005). The UK Corporate Governance Code (FRC 2010b, p. 18) provides that the board of directors has the "responsibility to present a balanced and understandable assessment" of the company's financial performance, financial position and prospects. This balanced assessment includes explanations for performance.

In this context, Aerts and Tarca (2010) note that performance explanations have become a key component in the system of public accountability. Providing explanations reduces information asymmetry and can give shareholders more insight into whether management is capable of creating shareholder wealth. As corporate disclosure is mainly decided at board level (Gul and Leung 2004) and the quality of the corporate governance system influences the quality of financial reporting (Whittington 1993), it can be argued that a firm's corporate governance system influences attribution disclosure. Stronger corporate governance mechanisms can increase accountability pressures and so induce management to be more forthcoming about the reasons for performance, and to increase disclosure of explanations. In addition, stronger oversight might dampen management's attempts at impression management, leading them to be less defensive and less assertive in their attributions.

While the influence of corporate governance mechanisms on disclosure has been analysed by a multitude of studies, the issue of how attribution statements are influenced by corporate governance has not been well researched.[8] Therefore, in the following sections, hypotheses on the link between attribution disclosure and corpo-

[8]See Chapter 2, section 3.2 for a detailed review.

rate governance attributes are developed.

3.3.1.1 Proportion of non-executive directors on the board (*PropNED*)

The board of directors occupies the central role in internal control, and is composed of both inside directors and outside directors.[9] Fama and Jensen (1983) highlight that internal managers will be the most influential board members as they are involved in running the business, thus have specific insight into the firm's processes. Management therefore may easily use the board to their own advantage at the expense of shareholders' interests (Williamson 1984). Furthermore, Jensen (1993) suggests that inside directors are to some extent dependent on the CEO and therefore could not openly bring up criticism and monitor their superior. The inclusion of outside directors who are not employed by the firm can mitigate this problem (see e.g. Fama 1980 and Leftwich et al. 1981). Their task is to "scrutinise the performance of management in meeting agreed goals and objectives and monitor the reporting of performance" (FRC 2010b, p. 11). Including outside, or non-executive directors enhances monitoring and control of top management and limits expropriation of shareholders because "...outside directors have incentives to carry out their tasks and do not collude with managers to expropriate residual claimants" (Fama and Jensen 1983, p. 315). Fama and Jensen (1983) argue that outside directors are usually managers themselves, thus have interest in establishing a reputation as experts in decision control as their market value as managers depends on their performance as decision makers. Hence, outside directors will have interest in closely controlling a firm's management to demonstrate their expert skills so as to foster their own reputation and market value. The UK Corporate Governance Code (FRC 2010b) recommends that the board is to be composed of an adequate mixture of both executive and non-executive directors such that none of the groups can influence and dominate the decisions made on the entire board. Further, the UK Code (FRC 2010b) recommends that firms state which non-executive director they consider to be independent, that is having no ties or close relationships

[9] The literature refers to this dichotomy varyingly as executive/ non-executive directors (e.g. Forker 1992; Gul and Leung 2004; Mangena and Pike 2005) or as inside/outside directors (e.g. Fama and Jensen 1983; Beasley 1996).

with the firm or its personnel, so that the directors' judgment will not be affected by potential relationships with the firm. The Code provides a number of criteria for judging independence.[10] This thesis takes the position that any non-executive director can add value to the monitoring process, not necessarily only those considered to be independent, and that they can complement each other in providing oversight. Hence a broad view is adopted here and the role of all non-executive directors for attribution statement disclosure is examined, whether they are formally considered independent or not.

Forker (1992) argues that the improved monitoring by non-executive board members will lead to better disclosure quality as it reduces the benefits for management of not disclosing information. Moreover, Patelli and Prencipe (2007) suggest that independent directors would not only monitor insiders' actions but also push inside directors to improve and strengthen other control mechanisms such as disclosing more voluntary information.

On the basis of the link between outside directors, monitoring of management, and disclosure, it can be suggested that there is an association between non-executive board members and disclosure of performance attributions. Schaffer (2002) and Barton and Mercer (2005) highlight that attribution statements to financial performance outcomes can be used by the board to assess management performance. Directors will want to know the reasons behind performance to assess this performance and to analyse whether management is doing a good job. It can therefore be expected that non-executive directors may push management to provide more extensive performance explanations. In order to satisfy outside directors' demands, management will have to provide these explanations. This suggests a positive association between the proportion of non-executive directors on the board and the extensiveness of attribution disclosure.

In addition, there is also research to suggest that executive and non-executive di-

[10]The UK Corporate Governance Code (FRC 2010b, para B.1.1) defines independence if the director (1) has not been an employee of the firm in the last 5 years, (2) has not upheld a material business relationship with the firm the last couple of years, (3) does not obtain remuneration by the firm of any kind, (4) does not have close family ties to the firm's leading personnel, (5) does not have cross-directorships or associations with other board members, (6) does not represent a significant shareholder, or (7) has not already served on the board for more than 9 years.

rectors may differ in the tendency to provide internal or external attributions. Schaffer (2002) argues that inside and outside directors face different constraints that reduce their monitoring ability and will lead to a different behaviour when it comes to giving attributions for poor firm performance. Schaffer (2002) states that inside directors are restrained by their proximity and loyalty to the CEO ('social constraints'), and the potential fear of retaliation in case they oppose and criticise the CEO and top management. Therefore, they will tend to be less critical of their own firm and more likely to, for instance, attribute poor performance to external factors than to internal reasons. Outside directors on the other hand do not assess their own performance, and their personal accountability is mostly to the firms in which they are directors. Hence they are more free in their attribution search and could attribute performance either to internal or external causes. Schaffer (2002) argues that outside directors, for example, will be more likely to give internal attributions for bad performance if internal reasons are the cause. This suggests that non-executive directors may differ from executive directors in the tendency to provide internal or external attributions.

Empirical research has produced mixed results. A significant positive association between the proportion of outside directors on the board and voluntary disclosure was reported by Patelli and Prencipe (2007), Lim et al. (2007), and Donnelly and Mulcahy (2008). A positive association was also found by Li et al. (2008) with intellectual capital disclosure and by Chen and Jaggi (2000) with comprehensiveness of financial disclosure. Baek et al. (2009) reported a positive association with overall disclosure and with information about board and management processes in particular, and Cheng and Courtenay (2006) reported a positive association between boards dominated by a majority of independent directors and disclosure. Felo (2010) found a positive relationship between director independence and corporate reporting transparency, and a meta-analysis of disclosure studies by Garcia-Meca and Sanchez-Ballesta (2010) found a positive relationship between director independence and disclosure for non-Anglo-Saxon countries.

By contrast, a negative association between outside directors and voluntary disclosure was reported for a sample of firms from Singapore (Eng and Mak 2003), Hong

Kong (Gul and Leung 2004), Malaysia (Haniffa and Cooke 2005), Kenya (Barako et al. 2006), and for compliance with executive stock option disclosures in Australia (Nelson et al. 2010). No relationship was found by e.g. Forker (1992), Ho and Wong (2001), Haniffa and Cooke (2002), Mangena and Pike (2005). Also, Brammer and Pavelin (2006) and Felo (2010) did not find an association between outside directors and corporate reporting transparency. Therefore, based on the theoretical considerations the following hypotheses are stated, with hypothesis H1b in non-directional form:

H1a: There is a positive association between the proportion of non-executive directors on the board and attribution disclosure.

H1b(i): There is an association between the proportion of non-executive directors and internal attribution disclosure.

H1b(ii): There is an association between the proportion of non-executive directors and external attribution disclosure.

3.3.1.2 Director ownership (*Dirown*)

Agency theory suggests that managerial ownership helps align managers' and shareholders' interests more closely and thereby reduces the agency problem (e.g. Jensen and Meckling 1976; Jensen 1993). When managers have an equity stake in the firm, acting in self-interest becomes more costly for the managers as they share an increasing portion of the costs of this behaviour and not only the benefits. Managers therefore will have a higher incentive to act in the interest of shareholders, which includes themselves. In this context, managers are more likely to engage in actions that improve firm value. One action that managers can take is to increase voluntary disclosure (Ruland et al. 1990; Eng and Mak 2003).

Studies (e.g Forker 1992; Leung and Horwitz 2004; Mangena and Pike 2005) suggest a positive relationship between executive director ownership and disclosure. The idea is that higher levels of director ownership would reduce the extent of the

agency problem and provide incentives to the directors to disclose more (Leung and Horwitz 2004). Also, Mangena and Pike (2005) suggest that directors may be inclined to increase disclosure if they want to buy or sell their firms' shares, as higher disclosure might lead to higher liquidity, which in turn would increase share price. Hamill et al. (2002) stress that executive directors are insiders so that their trading falls under insider dealing regulations, and that insiders are not allowed to trade firm's shares without disclosing inside information. Hence Mangena and Pike (2005) argue that directors would have incentives to disclose more information to the market in order to prevent falling foul of insider trading rules when trading their shares.

In this context, there is reason to suggest a positive association between executive director ownership and attribution statement disclosure. The capital market expects explanations of performance outcomes and if these go unsatisfied, this may result in negative effects on share price and directly hurt managers' wealth. The more shares management owns, the more management has to lose. Therefore, the higher management's stake and influence in the firm, the more they might be inclined to explain the causes for performance to satisfy investors' demands. Providing more detailed performance explanations may give investors more confidence in the probabilities of their expected payoffs, this might lead to a lower required rate of return and higher stock price. This will directly benefit directors' wealth.

It can also be expected that the level of executive director ownership influences the type of attribution (internal or external) provided. If management holds part of their wealth in their firm, they may engage in self-serving behaviour and impression management to make sure their wealth is protected. Hence the higher management's stake, the more they will be inclined to engage in impression management to convince the market of the quality of the firm and to keep and attract investors. This behaviour can support the firm's stock price, and thereby help protect management's financial interests. In sum, one would expect that the pattern of attributing outcomes to internal or external causes differs with the degree of management ownership.

Empirical research has not provided clear evidence for the relationship between management ownership and disclosure. Ruland et al. (1990) and Karamanou and

Vafeas (2005) found a negative association of managerial ownership with the likelihood of giving management earnings forecasts. Eng and Mak (2003) demonstrated a negative association between managerial ownership and voluntary disclosure in the Management Discussion and Analysis section, and Chau and Gray (2002) reported a negative association of ownership by insiders (directors and dominant shareholders) with voluntary disclosures. Mixed evidence has been provided by Leung and Horwitz (2004). They found a positive association between higher director ownership (between 1% and 25% of the shares) and more voluntary segment disclosure, but a negative association beyond 25%, pointing to negative effects of ownership concentration. Baek et al. (2009) found a negative relationship between managerial ownership and disclosure for firms with low director ownership ($< 5\%$). Other studies found no significant association between management ownership level and share option disclosure (Forker 1992), interim disclosure (Mangena and Pike 2005), firms' internet financial reporting (Kelton and Yang 2008), and overall voluntary disclosures (Donnelly and Mulcahy 2008). Therefore, based on the theoretical considerations and the mixed empirical evidence, the following hypotheses are stated in a non-directional form:

H2a: There is an association between director ownership and attribution disclosure.

H2b(i): There is an association between director ownership and internal attribution disclosure.

H2b(ii): There is an association between director ownership and external attribution disclosure.

3.3.1.3 Audit committee characteristics

The board of directors carries out the monitoring function on behalf of the shareholders to ensure management acts in their interests. This function is commonly carried out in specialised board committees tasked with specific aspects of monitor-

ing. Oversight over financial reporting matters is assigned to the audit committee (see Blue Ribbon Committee 1999; Smith Committee 2003; FRC 2010b) which constitutes a key part of the accountability component of corporate governance (Keasey and Wright 1993).[11] The role of the audit committee is to monitor the firm's internal accounting processes and controls, financial reporting and financial statements, and to interact on a regular basis with the firm's internal and external auditors (see e.g. Fama and Jensen 1983; Klein 1998; Blue Ribbon Committee 1999; He et al. 2009). Reflecting these tasks, the Blue Ribbon Committee (1999, p. 17) describes the audit committee as "...the entity at the core of the corporate financial reporting process". It has responsibility to ensure that the accounting information provided to the outside is unbiased (Klein 1998; Song and Windram 2004; FRC 2010a). The Smith Committee (2003, p. 10 para 5.4) explicitly stated that the audit committee "should review related information presented with the financial statements, including the operating and financial review ...". This implies that the review should also consider the performance explanations provided by managers to ensure that they are fair and unbiased.

The Smith Committee (2003) identified some attributes of audit committee effectiveness. In this study, the attributes of audit committee size and audit committee expertise are considered to influence the disclosure of explanations for performance outcomes.[12]

Audit committee size (*ACSize*)

The Blue Ribbon Committee (1999, p. 26) argues that due to the complex nature of the accounting and financial matters the audit committee deals with, it "... merits significant director resources, both in terms of the number of directors dedicated to the committee and the time each director devotes to committee matters". Both the Blue Ribbon Committee (1999) and Smith Committee (2003) recommend that at

[11] Two other commonly used board committees are the remuneration and nomination committee.

[12] A third aspect often analysed in the literature, the independence of audit committee members (e.g. Abbott et al. 2000; Anderson et al. 2004; Karamanou and Vafeas 2005; Armstrong et al. 2010) was considered for this study as well. The data collection process, however, revealed that 94% of audit committee members of the sample firms were classified as independent non-executive directors, hence the variable was dropped from the analysis.

the minimum, the audit committee should have three independent directors. The UK Corporate Governance Code (FRC 2010b) also recommends a minimum of three members, or at least two for smaller firms. Felo et al. (2003) and Abbott et al. (2004) argue that larger committees can provide better oversight as they are, due to more members, more likely to uncover and highlight problems in financial reporting. Furthermore, increasing the number of committee members strengthens the committee's position towards management, and reduces the potential for the members to collude with management on financial reporting matters and to take actions to the detriment of the shareholders (Archambeault and DeZoort 2001).[13]

In the context of attribution statements, a large audit committee provides greater potential for critical questioning of the validity of the reasons provided by management to explain performance and would be, potentially, less likely to accept any explanation at face value. This may reduce self-serving tendencies and so influence not only the extent of attribution disclosure but also the type of attributions provided. In this respect, managers would be more likely to take responsibility and make appropriate internal and external attributions for performance in a non-self-serving manner.

Empirical research on the effect of audit committee size has provided mixed evidence. For instance, while Lin et al. (2006) reported a significant negative association of audit committee size and occurrence of earnings restatements, neither Abbott et al. (2004), Xie et al. (2003) nor Bedard et al. (2004) found a significant association with earnings management. By contrast, a significant negative association was found between audit committee size and quarterly earnings management (Yang and Krishnan 2005) and suspicious auditor switches (Archambeault and DeZoort 2001).

In terms of the effect of audit committee size on disclosure, the research evidence is also mixed. A positive association was found by Felo et al. (2003) and Felo and Solieri (2009) between audit committee size and the quality of financial reporting and disclosure, and by Nelson et al. (2010) between audit committee size and com-

[13]Other studies take the contrary position suggesting that larger boards are less effective due to internal coordination problems and poorer communication and decision making, hence reducing monitoring and control capabilities (see Lipton and Lorsch 1992; Jensen 1993; John and Senbet 1998). Felo et al. (2003) and Yang and Krishnan (2005), however, argue that audit committees are not as large as the board of directors, so these problems are unlikely to happen.

pliance with executive stock option disclosure. Karamanou and Vafeas (2005), using management earnings forecasts as proxy for disclosure, found a positive association between audit committee size and forecast accuracy, but they also reported a significant negative association between audit committee size and (1) the likelihood of providing earnings forecasts and (2) forecast precision. Yet Mangena and Pike (2005) and Mangena and Tauringana (2007) found no significant association with disclosure level in interim reports. Based on the notion that larger audit committees may have more potential for critical analysis and thus lead to more detailed performance explanations, as well as the empirical evidence, the following hypothesis is stated, with H3b in non-directional form:

H3a: There is a positive association between audit committee size and attribution disclosure.

H3b(i): There is an association between audit committee size and internal attribution disclosure.

H3b(ii): There is an association between audit committee size and external attribution disclosure.

Audit committee expertise (*ACExp*)

There is broad agreement among committees of enquiry and in the literature that audit committee members should be appropriately qualified (e.g. Blue Ribbon Committee 1999; Smith Committee 2003; McDaniel et al. 2002; Felo et al. 2003). For the audit committee to be effective, the members "... need to have sufficient understanding of the issues to be dealt with by the committee to take an active part in its proceedings" (Cadbury Committee 1992, para 4.37). The members therefore need to have financial expertise, experience, and the ability to read and understand financial statements (Bull and Sharp 1989; Song and Windram 2004). The view is that members with financial expertise and technical knowledge can ask more probing questions and will be more critical towards management and reporting (Knapp 1987;

Bull and Sharp 1989; Levitt 2000; McDaniel et al. 2002). Moreover, Knapp (1987) suggests that in an audit dispute with management audit committee members with financial expertise will be less influenced by management and more likely to support the auditor. Experts on the committee could also 'sharpen and shift the focus' of discussions and assessments of the quality of financial reporting in the committee (McDaniel et al. 2002, p. 142). Taken together, this suggests a positive association between financial expertise on the audit committee and better disclosure quality.

Against that background, to increase effectiveness of the audit committee, both the Blue Ribbon Committee (1999) and the Smith Committee (2003) recommend that the audit committee contains at least one member with expertise in accounting or financial management. This principle has been incorporated into the UK Corporate Governance Code (FRC 2010b). It can be achieved by demonstrating prior experience as CEO, finance director, or auditor, as well as evidence of a professional accounting qualification (Blue Ribbon Committee 1999; Smith Committee 2003).

Research evidence on the association of financial expertise and financial reporting issues shows a positive effect. Abbott et al. (2000) reported a negative association of expertise with financial statements fraud, and Song and Windram (2004) a negative relationship between audit committee financial expertise and incidences of investigations by the Financial Reporting Review Panel (FRRP). Dhaliwal et al. (2010) found a positive association between expertise and accruals quality, whilst Abbott et al. (2004) reported a negative association with occurrence of earnings restatements. Yang and Krishnan (2005), however, found no significant association between the presence of an expert on the committee and quarterly earnings management. Knapp (1987) found that experts were more supportive of the auditor in an audit dispute with management, whereas Carcello and Neal (2003) and DeZoort and Salterio (2001) reported no significant association between financial expertise and auditor dismissals following a going-concern report.

A number of studies have also examined the effect of audit committee financial expertise on disclosure. For example, Felo et al. (2003) documented a positive association of committee expertise with financial reporting quality. Felo and Solieri

(2009) found a positive association between disclosure and the percentage of expert members who are affiliated with firms that have business relations with the firm, and a negative association between disclosure and the percentage of expert members who are relatives of firm executives. Moreover, adding more independent experts was followed by subsequent improvements in disclosure quality. Karamanou and Vafeas (2005) reported a positive association between audit committee expertise and the likelihood of updating forecasts. Mangena and Pike (2005) and Kelton and Yang (2008) found a positive association between audit committee financial expertise and interim disclosure, and internet financial reporting, respectively. Mangena and Tauringana (2007) reported a positive association of financial expertise with compliance with the ASB statement of best practice on interim reporting. Finally, Nelson et al. (2010) find audit committee expertise to be positively associated with compliance with executive stock options disclosures.

Consequently, in this thesis it is hypothesised that audit committee financial expertise is associated with attribution statements. The more financial expertise and experience an audit committee has, the more likely it will encourage management to provide detailed explanations for performance outcomes. Audit committee members with financial expertise and experience are better able to discern the reasons for performance and to probe management to provide more information, leading to more extensive and detailed causal performance attributions. In addition, audit committees with more financial expertise will influence the way a performance outcome is attributed via critical questioning of the validity of the reasons provided by management to explain performance. This suggests that the audit committee will less easily approve self-serving attributions, in which management tends to claim successes and blame failure on the environment. Following the above discussions, the following hypotheses are stated:

H4a: There is a positive association between audit committee financial expertise and attribution disclosure.

H4b(i): There is an association between audit committee financial expertise and

internal attribution disclosure.

H4b(ii): There is an association between audit committee financial expertise and external attribution disclosure.

3.3.2 Firm-specific characteristics

In addition to corporate governance factors, this thesis analyses the influence of firm-specific characteristics on the disclosure of causal attributions. The effect of firm-specific characteristics on corporate disclosure has been examined by numerous studies (e.g. Singhvi and Desai 1971; Chow and Wong-Boren 1987; Cooke 1989; Wallace et al. 1994; Wallace and Naser 1995; Meek et al. 1995; Hossain et al. 1995; Raffournier 1995; Archambault and Archambault 2003; Mangena and Pike 2005; Haniffa and Cooke 2005; Cerbioni and Parbonetti 2007).[14] These studies revealed that a number of firm-specific characteristics, such as firm size, gearing, and profitability, influence the disclosure of information.

Since performance explanations are a central part of a firm's disclosure strategy (Barton and Mercer 2005), it can be argued that certain firm-specific characteristics will also influence the disclosure of performance explanations. A limited number of studies have pursued this issue and investigated specifically which firm characteristics influence the disclosure of causal attributions (e.g. Staw et al. 1983; Aerts 1994; Aerts 2005; Aerts and Tarca 2010). As was reviewed in Chapter 2, section 3.2, these studies provided evidence that factors such as firm size, profitability, and listing status influence the way firms disclose attributions, and hence these factors are examined in this study. This study also adds to existing literature by investigating additional firm-specific characteristics that were found to influence general information disclosure. The characteristics investigated in this thesis are discussed below:

[14] Ahmed and Courtis (1999) and Chavent et al. (2006) provide detailed reviews of this literature.

3.3.2.1 Firm size (*Size*)

There is strong evidence in the literature that firm size and disclosure are positively associated. Several reasons why larger firms can be expected to have a higher disclosure level have been suggested: the competitive disadvantage from disclosing information is potentially lower for bigger firms (Singhvi and Desai 1971; Meek et al. 1995); they have a lower cost of information production and dissemination (Buzby 1974; Chavent et al. 2006; Cerbioni and Parbonetti 2007); larger firms have higher agency costs and are more exposed to government intervention and political costs (Jensen and Meckling 1976; Watts and Zimmermann 1986; Cooke 1989); and there is a higher demand for information from analysts (Hossain et al. 1995). Consistent with these arguments, a number of studies on the determinants of disclosure found a significant positive relationship (e.g. Chow and Wong-Boren 1987; Lang and Lundholm 1993; Wallace and Naser 1995; Meek et al. 1995; Hossain et al. 1995; Ahmed and Courtis 1999; Cerbioni and Parbonetti 2007; Lim et al. 2007).

Similar arguments can be presented for a positive association between firm size and the disclosure of attributions. Indeed, prior studies support this relationship. For example, Baginski et al. (2004) and Baginski et al. (2008) found that larger firms provided more attributions in their management earnings forecasts. Aerts (2005) reported an influence of firm size on attribution characteristics. The study showed a negative association between firm size and defensive (excuses, denials) attribution tendencies, and a significant positive association with self-acclaiming (entitlements, enhancements) attributions. By contrast, Aerts (1994) did not find a relationship between firm size and attribution characteristics.

In addition, regarding the type of attributions (internal or external), both Baginski et al. (2004) and Baginski et al. (2008) found that larger firms provided more external attributions in their management earnings forecasts. Hence the following hypotheses are stated:

H5a: There is a positive association between firm size and attribution disclosure.

H5b(i): There is an association between firm size and internal attribution disclo-

sure.

H5b(ii): There is an association between firm size and external attribution disclosure.

3.3.2.2 Analyst following (*AF*)

There is evidence in the literature that analyst following influences attribution statement disclosure (e.g. Aerts and Tarca 2010). Analysts are among the prime users of financial information and play a vital role in the capital market by processing information that is relevant to economic decision making and helps investors in their investing and capital allocation decisions (Lang and Lundholm 1996; Healy and Palepu 2001). In order to carry out their tasks, analysts require firms to provide them with information. The more information about a firm analysts have at their disposal, the more precise their judgements about the firm and its prospects can be (Lang and Lundholm 1996).

Of particular relevance in this context are explanations for corporate performance outcomes. Barton and Mercer (2005) demonstrate that analysts use management's performance explanations when they are evaluating firm performance, and that these explanations influence the assessed share value. They suggest that performance explanations could be used by firms to try and influence analysts' interpretations of the results. This suggests that the higher the number of analysts covering a firm, the more a firm will try and provide interpretations of the results. In this context, managers may provide more detailed attribution statements that convey an interpretation of the results in accordance with management's view, in an attempt to guide and influence analysts' reactions to the reported performance towards a certain direction.

Prior empirical studies found support for a positive association of disclosure and analyst following. For instance, Lang and Lundholm (1996) and Healy et al. (1999) reported a significant positive association between analyst following and a firm's disclosure quality, and Healy et al. (1999) also found that increases in disclosure are associated with increases in analyst following. Clarkson et al. (1999), however,

reported no significant association. With regard to attribution disclosure, Aerts and Tarca (2010) found that firms with higher analyst following disclose significantly more performance explanations. Furthermore, Aerts and Tarca (2010) showed that firms with higher analyst following attribute outcomes in a significantly more self-serving way, that is claiming more successful outcomes for internal reasons and blaming negative outcomes on external factors. The authors also found that firms with higher analyst following use impersonal and seemingly objective technical-accounting explanations significantly more often for negative outcomes than for positive outcomes, and vice versa, that is they explain positive outcomes much more in a causal narrative way than with technical accounting terms. This suggests that the higher scrutiny brought by higher analyst following influences attribution behaviour, and might incentivise firms to explain results in a more self-serving fashion. Hence, the following hypotheses are stated:

H6a: There is a positive association between analyst following and attribution disclosure.

H6b(i): There is an association between analyst following and internal attribution disclosure.

H6b(ii): There is an association between analyst following and external attribution disclosure.

3.3.2.3 Gearing (*Gear*)

Agency theory suggests that agency costs increase with the level of debt in the capital structure, as this increases management's incentives to transfer wealth from the bondholders to the shareholders (see Jensen and Meckling 1976). The firm can counter these costs by disclosing more information. Furthermore, according to Myers (1977) and Schipper (1981), firms with higher gearing disclose more information because the firms' long term creditors will require more information than from a firm with lower leverage, to make sure their claims are safe.

Causal attributions are not only a means to justify performance. Another function is to foster confidence in management's actions and to create an image that management is in control of the situation and will be in the future (Salancik and Meindl 1984). Salancik and Meindl (1984, p. 239) argued that firms' attributions are not merely explanations of outcomes, but "...political statements that reassure constituents or induce them, when necessary, to participate in the organization's affairs". The holders of debt of a highly geared firm might be watching more closely a firm's performance and might want more explanations for performance outcomes to monitor debt covenants to make sure their capital is repaid (Wallace and Naser 1995; Mangena and Pike 2005). Also, investors may be less confident regarding an investment in a highly geared firm. To counter this problem, management can use causal attributions to create an image that everything is under control, that there is no reason to be worried, and so to give debtholders and investors confidence. A possibility for management to use attributions in this way is by providing more explanations, and by using more self-serving attribution tactics. Aerts (2005, p. 506) agrees with this view, arguing that "As a primary financial risk indicator, higher financial leverage could induce companies to become more impression management sensitive and to be more prone to using verbal coping tactics". This suggests that higher geared firms may provide more attributions to counter doubts about their future stability and to convince investors that they are not as risky as it appears.

Moreover, higher gearing may lead firms to attribute outcomes either more to internal causes to reassure investors that management is in control (Salancik and Meindl 1984), or more to external reasons to suggest that management is doing the right thing, but external factors intervened so that the positive effects of management's actions could not unfold (Staw et al. 1983). Hence, it can be argued that the type of causal attributions given by highly geared firms differs from those of lower geared firms, yet specific a priori predictions about how the attribution behaviour will differ between the two groups cannot be made.

Empirical research has not clearly confirmed a positive relationship between gearing and disclosure. While some studies found a positive association (e.g. Riahi-

Belkaoui and Kahl 1978; Malone et al. 1993, Wallace et al. 1994, Ferguson et al. 2002), other studies found a negative association (e.g. Schadewitz and Blevins 1998), and yet others did not find gearing to be significant (Haniffa and Cooke 2005; Wallace and Naser 1995; Mangena and Pike 2005). Regarding causal attributions, Aerts (2005) and Aerts and Tarca (2010) could not find a significant association. Therefore the following hypotheses are stated:

H7a: There is a positive association between gearing and attribution disclosure.

H7b(i): There is an association between gearing and internal attribution disclosure.

H7b(ii): There is an association between gearing and external attribution disclosure.

3.3.2.4 Profitability (*Profit*)

Signalling theory suggests that good performing companies disclose more information so as to distinguish themselves from less profitable firms.

Signalling superior performance avoids the costs associated with being perceived by investors as a 'lemon' (Akerlof 1970)[15]. Moreover, Singhvi and Desai (1971) argue that, as profitability is seen as a measure of good management performance, higher profitability may incentivise management to provide more information to assure investors of the firm's profitability and to support management compensation.

The same logic can be applied to suggesting an association of profitability with the amount and the type of attribution disclosure. Attributions to financial performance outcomes are a direct means of explaining the reasons for the achieved profitability. Therefore, profitable firms will provide more detailed explanations for their performance than less profitable firms so as to emphasise their achievement. This may convince investors of the sustainability of the achieved performance, and to retain current and/or attract new investors to the stock.

[15]Akerlof (1970) uses the term 'lemon' to denote a product of bad quality.

The justification of profitability may also incite management to engage in impression management. If profitability is high, firms would have an incentive to elaborate on this success, thus providing more detailed explanations pointing out how well they performed. There is also reason to suggest that when profitability is lower, management's attributions to internal and external reasons will be different. Bowman (1976) analysed the content and topics in letters to shareholders in annual reports of US food-processing firms and documented that firms with low profitability talked more often about the external environment and factors than high profitability firms, which talked more about internal factors. Thus profitable firms may be more inclined to underscore internal strengths and highlight their responsibility for performance in an attempt to demonstrate to investors that management is best placed to create wealth for the investors. By contrast, lower profitability may prompt management's denial of responsibility and search for external reasons, trying to reassure investors that this had nothing to do with management capabilities and boost investors' confidence in the firm as an investment.

The results by a multitude of studies on the association between profitability and disclosure level are mixed. Whilst some studies found a positive relationship between profitability and disclosure (e.g. Singhvi and Desai 1971; Gul and Leung 2004; Haniffa and Cooke 2005; Lim et al. 2007; Arshad et al. 2011), other studies found a negative relationship (Wallace and Naser 1995; Chen and Jaggi 2000), and some studies found no association (Wallace et al. 1994; Raffournier 1995; Ho and Wong 2001; Chau and Gray 2002; Eng and Mak 2003; Mangena and Pike 2005; Kelton and Yang 2008).

Likewise, empirical evidence regarding the relation of profitability and disclosure of causal attributions is also mixed. While Aerts (2005) failed to find an association between characteristics of causal attributions and profitability, Aerts and Tarca (2010) and Aerts and Cheng (2011) reported a negative relationship of attributional defensiveness with profitability and change in profitability. In a longitudinal study, Salancik and Meindl (1984) found that firms with unstable performance history provided more attributions, both internal attributions for success and external attributions for bad outcomes. Huff and Schwenk (1990) provided evidence that the proportion of space

in Chrysler executives' speeches to stock market analysts that is accorded to external attributions increased significantly in years of bad financial performance compared to good years. Therefore, based on the mixed empirical evidence, the following non-directional hypotheses are stated:

H8a: There is an association between profitability and attribution disclosure.

H8b(i): There is an association between profitability and internal attribution disclosure.

H8b(ii): There is an association between profitability and external attribution disclosure.

3.3.2.5 Financial performance change (*Perf*)

Aerts (2005) highlighted that performance attributions are normally given to changes in performance, not to absolute levels. Indeed, other previous research has provided strong evidence that a change in financial performance influences the disclosure of performance explanations (e.g., Bettman and Weitz 1983; Aerts 1994; Aerts 2005; Tessarolo et al. 2010).

The attribution theory posits that individuals generally expect to be successful and see themselves as having control of their actions and the environment (Miller and Ross 1975; Gooding and Kinicki 1995). If an outcome is as expected, there is no need for an extensive explanation as the reasons are presumed to be known (Gooding and Kinicki 1995). On the other hand, when an outcome is unexpected and/or is negative, this belief is shaken and individuals need to find an explanation. In this case, if an outcome is negative or falls short of expectations, greater attributional search is triggered than if the outcome is successful or expected, and individuals provide a greater amount of attributions to explain what has happened (e.g. Lau and Russell 1980; Wong and Weiner 1981; Weiner 1985; Lee et al. 2004). Experiments by Wong and Weiner (1981) confirmed this claim, by demonstrating that most attributions are given when the outcome is unexpected and negative.

On that basis, the literature argues that a downturn in financial performance is a predicament for a firm which will increase the need to comment on the outcomes, hence increasing the amount of attributions provided (e.g. Staw 1980; Staw et al. 1983; Aerts 2005). Similarly, Bettman and Weitz (1983, p. 182) suggested that "... since annual reports can be used as persuasive documents, higher levels of justification through causal reasoning may occur because corporations have a greater need to attract investments after a year of unexpected negative performance". This observation is consistent with the suggestion by Baginski et al. (2004, p. 13) that "investors are likely to demand explanations for unexpected bad news".

With regard to attributions to internal and external reasons, managers' previous experiences and successes may create an illusion of control and make them overconfident in their own abilities, focusing on internal actions and reasons for performance (Ford 1985; Huff and Schwenk 1990). In case of failure, internal actions will not be cited as they were supposed to lead to good outcomes, and external causes will be perceived as responsible, which may lead to an increase in external attributions (Ford 1985; Huff and Schwenk 1990). Furthermore, management may tend to blame external causes for a downturn in performance to try and maintain investor confidence and prevent selling of shares[16], or for fear for their positions or compensation (Clatworthy and Jones 2003). Against that background, a positive association between a negative performance change and external attributions can be expected.

The association between financial performance change and both the amount and type of attribution disclosed has been confirmed empirically. For instance, Bettman and Weitz (1983) demonstrated that most attributions were given when firm performance was worse than expected and when the firms mostly talked about negative outcomes. Baginski et al. (2004) found evidence that firms provided attributions in earnings forecasts more often in case of bad news. Moreover, Aerts (2005) showed that in case of a negative performance change, firms tend to increase their self-promotion and self-enhancement.

[16]Abrahamson and Park (1994) for instance argued that the fear of stock price decline induced by investors' selling following the revelation of bad performance may lead management to conceal bad news.

Clatworthy and Jones (2003) showed that firms whose performance had declined from the previous year were much more likely to give external attributions to explain the outcome. Consistent with the finding by Clatworthy and Jones (2003), Baginski et al. (2004) found that internal attributions in management earnings forecasts were more likely for good news (hence external attributions for bad news), and Baginski et al. (2008) demonstrated a positive association between bad news in firms' management earnings forecasts (i.e. negative unexpected earnings) and external attributions. Hence the following hypotheses are stated:

H9a: There is a positive association between a negative change in financial performance from the previous year and attribution disclosure.

H9b(i): There is an association between a negative change in financial performance from the previous year and internal attribution disclosure.

H9b(ii): There is a positive association between a negative change in financial performance from the previous year and external attribution disclosure.

3.3.2.6 Share issue (*Issue*)

The literature argues that there is an association between share issuance and voluntary disclosure (see e.g. Choi 1973; Lang and Lundholm 1993; Lang and Lundholm 2000), based on the argument that firms seeking to raise money on the capital market benefit from providing more voluntary disclosure prior to an offering. This reasoning suggests that in order to maximise firm value and the value of the securities offered, firms will increase information provision to reduce information asymmetry. This reduces uncertainty surrounding the value of the securities, thus maximises the proceeds by reducing the cost of capital (Lang and Lundholm 1993; Frankel et al. 1995; Lang and Lundholm 2000). Moreover, increasing disclosure can enlarge the potential investor base and so the demand for the shares offered, thereby increasing the price (see Cooke 1989; Lang and Lundholm 1993).

With regard to the association between a share offering and attributions for per-

formance outcomes, a positive association can be suggested. Given that the aim of providing attributions to performance outcomes is to reduce information asymmetry and to help investors in their pricing of shares (see e.g. IASB 2005), it can be argued that firms will provide more explanations to their performance outcomes if they are planning on issuing equity, as more explanations provide investors with a better understanding of the reasons for performance. This may reduce uncertainty, the perceived level of risk associated with the shares, and lead to a more favourable pricing of the firm's shares in the following issue.

It can also be argued that the type of attribution provided (internal or external) is associated with equity offering. In order to attract capital at better rates, management may engage in self-serving behaviour and try and present the firm in a good light and as an investment with good prospects. That is, management might show a tendency to emphasise the firm's strengths and excellent management capabilities, whereas giving less prominence to external factors.

Empirical research suggests that disclosure and accessing the capital market are positively associated: For instance, Gibbins et al. (1990) provided evidence based on a survey and interviews that disclosures are influenced by the frequency with which firms access the capital market. Frankel et al. (1995) analysed a 4 year period of US listed firms and found evidence that firms which recur to external financing via the capital market more often, issue earnings forecasts with a higher frequency. Lang and Lundholm (1993) found a positive association between disclosure and firms raising money in the current or the following two years. Lang and Lundholm (2000) also showed that issuing firms substantially increased their disclosure activity six months prior to the offering as compared to a control sample. In addition, Mangena and Tauringana (2007) reported a positive association between share issue and firms' compliance with the interim report disclosure requirements. However, Gul and Leung (2004) found no significant association between voluntary disclosure and equity issuance. Therefore the following hypotheses are stated:

H10a: There is a positive association between a share issue in the following year

and attribution disclosure.

H10b(i): There is a positive association between a share issue in the following year and internal attribution disclosure.

H10b(ii): There is an association between a share issue in the following year and external attribution disclosure.

3.4 Summary and conclusion

This chapter has provided the theoretical underpinning for the analysis of the determinants of attribution disclosure. It has reviewed relevant theories of disclosure to provide an understanding of why firms voluntarily provide information in general, and attribution disclosure in particular. The review was followed by the development of hypotheses on the determinants of attribution statement disclosure, covering corporate governance mechanisms and firm-specific factors.

This chapter and the previous chapter have set the framework for analysing the determinants of attribution statement disclosure. The next chapter moves the investigation on to the second objective of this thesis and develops, based on reviewing the literature on disclosure and the cost of capital, the hypotheses regarding the association between attribution statements and the cost of capital.

CHAPTER 4

REVIEW OF THE LITERATURE ON DISCLOSURE AND THE COST OF CAPITAL

4.1 Introduction

The previous two chapters have focused on the literature on attributions and the development of hypotheses on the determinants of attribution statements. This chapter focuses on the second key objective of the research regarding the consequences of attribution provision, in particular the cost of capital effects of attribution provision. It reviews the literature on disclosure and the cost of capital and develops the hypotheses regarding the effect of attribution statements on the cost of capital. The chapter is structured as follows. First, the chapter reviews the theoretical literature that establishes a link between disclosure and the cost of capital. This serves as the underlying theoretical foundation for establishing the association between attribution statements and the cost of capital. Second, the chapter reviews the empirical literature that has investigated the link between disclosure and the cost of capital. This leads to the identification of the gap in current research that the thesis intends to fill. Third, hypotheses about the association of attribution statement disclosure and a firm's cost of equity capital are formulated. The chapter concludes with a summary.

4.2 The link between information and the cost of capital

Information and corporate disclosure of information play a crucial role in the capital market. As was discussed in the previous chapter, information asymmetry causes investors to require a higher rate of return than in the absence of information asymmetry, as investors protect themselves from other market participants that may possess superior information and can take advantage of the uninformed investor (Lev 1992; Verrecchia 2001). Verrecchia (2001, p. 171) labels this the 'information asymmetry component of the cost of capital', which is "...the difference in the cost of capital in the presence versus absence of an adverse selection problem that arises from information asymmetry".

Bartov et al. (2005, p. 98) stress that this information asymmetry problem can be reduced by financial reporting and disclosure: "The problem of asymmetric information between managers and shareholders is addressed through financial reporting and other means of timely public disclosure". A commitment to more disclosure reduces the benefits for a person to become privately informed, so that information asymmetry will be reduced (Lev 1988; Verrecchia 2001). Regarding the benefits of higher disclosure the literature found evidence for higher analyst following (Lang and Lundholm 1996), increased institutional ownership (Lev 1992), or increased liquidity of the stock (Healy et al. 1999). One of the most important benefits suggested by the literature, however, is the effect on a firm's cost of capital. A multitude of studies (e.g., Bartov and Bodnar 1996; Healy et al. 1999; Dye 2001) have pointed out that providing additional voluntary disclosures can further correct stock misvaluations and lower the required rate of return, so that "...the full value of the company's production, finance, and marketing strategies and activities will be reflected in a timely manner in its stock and bond prices" (Lev 1992, p. 12).

The literature has suggested various mechanisms regarding how the cost of capital effect of more information unfolds in the capital market. This section will now discuss

the mechanisms of how exactly information may affect the cost of capital. Theoretical research can be grouped into two broad streams. The first perspective suggests an indirect link via the effects of information on a stock's liquidity. The second perspective incorporates various theories that provide a direct link between disclosure and the cost of capital without referring to the means of liquidity. Offering different explanations for the association, the common proposition is that higher disclosure leads to a lower cost of capital.

4.2.1 Liquidity and the cost of capital

Research in this stream suggests that reducing information asymmetry in the market lowers the cost of capital by reducing transaction costs and increasing liquidity of the stock. Before discussing the literature suggesting the link between liquidity and the cost of capital, the notion of market liquidity has to be briefly introduced. Liquidity refers to the fact that shares of a firm can be bought or sold immediately and with as less an effect on price as possible, that is, the more liquid a market, the easier it is to trade assets, and the smaller the effect trading will have on price (O'Hara 1995). If demand and supply for a share are not balanced, that is there is no immediate seller (buyer), a market maker, or specialist, steps in and keeps the market liquid by acting as a counterparty (Fabozzi and Modigliani 2003). The market maker charges a premium for his services, and the trader incurs transaction costs and pays a 'price for immediacy' (Demsetz 1968). These costs, the difference in price at which the market maker buys or sells a security is known as the bid-ask spread (O'Hara 1995; Fabozzi and Modigliani 2003). Unlike the informed trader who has the option not to trade if he thinks the conditions are not optimal, the market maker has to trade (O'Hara 1995). Facing potential losses when trading with an informed trader, he sets the spread so as to break even to offset the expected losses with gains made from trades with uninformed traders (Glosten and Milgrom 1985). The consequence of this spread is a less liquid market, as pointed out by Kyle (1985, p. 1320): "... market makers compensate themselves for bad trades due to the adverse selection of insiders by making the market less liquid." Consequently, the higher the information asymmetry,

thus the risk of adverse selection, the higher the spread in the specialists' bid and ask prices.

The cost of capital effect of liquidity is based on research that has shown that the spread, as a measure of liquidity, is influenced by information asymmetry. For instance, Copeland and Galai (1983) demonstrated that the existence and extent of information asymmetry give rise to and influence the size of the spread, and Glosten and Milgrom (1985) provided the key insight that a trade of a stock has information content in itself, thus affects prices. This is because the bid-ask spread declines with trading volume, as inside information is incorporated into prices.

Building on this notion, subsequent theoretical research has explicitly analysed the cost of capital consequences of liquidity for a firm's cost of capital (e.g., Amihud and Mendelson 1986; Diamond and Verrecchia 1991; Baiman and Verrecchia 1996). These studies agree that increased disclosure of information leads to increased liquidity, reduced transaction costs, and a lower cost of capital. Evidence for the effect has been provided for both the primary and the secondary market.

Amihud and Mendelson (1986) demonstrated that returns are an increasing function of the bid-ask spread, asserting that this spread effect is a rational reaction by an efficient market when faced with a spread. In the presence of transaction costs, the investor requires a higher compensation via a higher required rate of return. Based on their results, Amihud and Mendelson (1986) suggested that firms have an incentive to reduce their opportunity cost of capital by engaging in liquidity-increasing behaviour such as information disclosure.

Diamond and Verrecchia (1991) and Baiman and Verrecchia (1996) offered a different possibility how liquidity may affect the cost of capital. They suggest that information asymmetry and the adverse selection problem negatively affect the future liquidity of a stock, because these factors increase the price impact of a large trade by large investors if they have to sell in the future. This increases the present required returns so as to compensate for future liquidity problems. Diamond and Verrecchia (1991) demonstrated that reducing information asymmetry via disclosure reduces uncertainty surrounding a firm's stock and the adverse selection problem, that is the

problem faced by the investor that the counterparty may have superior information about the stock and thus he/she may be taken advantage of. Reducing information asymmetry increases a stock's future liquidity, thereby increasing price and lowering the required rate of return. Consequently, market makers require a lower risk premium for engaging in trade and providing liquidity, and hence liquidity is increased. This effect will subsequently attract more large institutional investors to buy the shares and take larger positions, as the future negative price effect is reduced. This increased demand further increases stock price and reduces the required return. In addition, Baiman and Verrecchia (1996) showed that this liquidity effect also impacts on equity issuances in the primary market. Their model demonstrates that investors in an initial public offering, when first setting prices for the shares, demand a premium to take into account the possibility of having to trade for liquidity reasons in the future. The firm's initial choice of committing to a certain disclosure level thereby influences market liquidity at the time of the potential future trade. This affects investors' initial determination of the share prices, thus the firm's cost of capital. The authors argue that more disclosure reduces the information asymmetry between informed managers and market makers, as the latter do not have to rely on demand for the shares as much as before to glean information. This makes prices less sensitive to demand and increases market liquidity. Since the initial shareholders appreciate future liquidity, more disclosure reduces the firm's cost of capital.

4.2.2 Disclosure and the cost of capital: Direct links

The second broad stream of research attempts to provide a direct link between disclosure and the cost of capital without referring to liquidity. This literature encompasses several approaches, yet they all agree that increased disclosure may reduce the cost of capital.

4.2.2.1 Estimation risk

The effect of information disclosure on estimation risk is a widely used proposition and usually regarded in the literature, beside the liquidity effect, as the second main

way to explain how information can affect the cost of capital (see e.g., Botosan 2006). According to this perspective, more disclosure can reduce the cost of capital by reducing the non-diversifiable estimation risk associated with estimating the parameters of an asset's return or payoff distribution. The reasoning behind this link is exemplified by Barry and Brown (1985) who highlighted that in a traditional theoretical asset pricing and CAPM environment, it is generally assumed that the parameters required for calculating an asset's return or payoff distribution are certain. Barry and Brown (1985) further state that if parameter uncertainty, thus estimation risk, surrounding the parameters existed, it would not affect the model's predictions.

These assumptions have been challenged by the estimation risk literature based on the notion that, as investors cannot know all the parameters of a predictive distribution with certainty in advance, some of them still have to be estimated (Barry and Brown 1985; Handa and Linn 1993). The literature has argued that for each asset there is a certain amount of information available, which differs across assets (Handa and Linn 1993; Coles et al. 1995). Investors calculate the expected return or payoff from an investment based on the information available, hence a differing amount of information on assets can induce uncertainty for the investor regarding the parameters, resulting in estimation risk. Handa and Linn (1993, p. 89) have emphasised this notion by defining estimation risk as "...the additional risk incorporated in the covariance structure of returns by investors facing incomplete information." Therefore, when confronted with higher uncertainty about the exact parameters of the return or payoff distribution, a rational investor will require a higher rate of return to be compensated for this risk.

This hypothesised relationship has been confirmed by a number of studies. Barry and Brown (1985) showed that under differential information, high information stocks have smaller betas than if estimation risk was equal among all stocks. For low information stocks, they conclude, the beta then must be too low. A rational investor will demand a higher return on the security for which less information is available, as it is perceived to be riskier. These results have been confirmed by Coles et al. (1995) using a model based on payoff, not returns. They demonstrate that the presence of

estimation risk arising from symmetric uncertainty (when there is equal information for all the securities considered) affects equilibrium portfolio weights, asset betas, asset expected returns, and market expected return. Additional evidence was provided by Handa and Linn (1993) who, having modelled an economy with a constantly changing asset composition so that estimation risk and assets with incomplete information are always present, have demonstrated that beta and return calculations differ between the complete/incomplete information cases. With incomplete information, investors attribute more systematic risk to assets for which little information is available than they do for assets with more information. In case of different levels of information on assets, low (high) information asset prices are lower (higher), and low information stocks have higher betas than in the case of complete information for all assets. Moreover, in equilibrium, the demand and price of low (high) information assets are lower (higher) than if there was complete information.

There is, however, still some debate about whether estimation risk is diversifiable or not. For instance, whilst Barry and Brown (1985) demonstrated that this risk is systematic, thus non-diversifiable, the findings by Clarkson and Thompson (1990) do not fully support this. Although their results reject the strict assumption that estimation risk surrounding low information stocks is diversifiable, they do not provide unambiguous evidence for non-diversifiability. Rather, the findings suggest that estimation risk is partly diversifiable. The latter is consistent with evidence provided by Clarkson et al. (1996) who found that estimation risk may be both diversifiable and non-diversifiable, depending on the basis an investor uses for asset pricing. When estimated factor betas on exogenous factors are used, estimation risk will be diversifiable and not priced. By contrast, when assets are priced using estimated factor betas on imperfect mimicking portfolios which contain stocks for which little information is available, there is a systematic component to estimation risk. In light of this unsettled issue, Clarkson et al. (1996, p. 79) noted that "... the extent of the impact of estimation risk remains, fundamentally, an empirical question".

The model by Gao (2010) demonstrated that more disclosure improves investor welfare (defined as investors' ex ante expected utility) by lowering the cost of capital

only in certain circumstances. The cost of capital may even increase, and the effect depends on the type of economy and investor type. Disclosure influences the cost of capital via influencing the mean-variance ratio of the firm's cash flows. Disclosure quality could increase the cost of capital if it increases the overall cash flow risk of the firm. Better disclosure quality can increase or decrease welfare depending on whether it is a current or new investor, and the risk tolerance.

4.2.2.2 Incomplete Information model

A well-known approach to link information and the cost of capital has come from Merton (1987) who has modelled a situation in which there is incomplete, not asymmetric information. Every investor knows only a part of the stocks available, that is, they can only invest in a stock if they are aware of it, but every investor who is aware of a certain stock has the same information about it including homogenous beliefs about the return distribution. The model shows that the market value of a firm is always lower in the case of incomplete information; and the difference is bigger the smaller the investor base is. Moreover, Merton (1987) showed that this incomplete information significantly affects expected returns, in particular for less widely known stocks and which have small investor bases, as well as for smaller firms with little institutional following. Thus providing more information can increase the investor base, and will reduce the cost of capital and increase the market value, with the less known companies benefiting the most.

4.2.2.3 Information precision and the role of public and private information

A slightly different perspective on information asymmetry and its effects has been taken more recently by Easley and O'Hara (2004), Hughes et al. (2007), Christensen et al. (2010), Clinch and Lombardi (2011), and Lambert et al. (2012). Using a rational expectations model, Easley and O'Hara (2004) demonstrated that, when comparing two identical stocks, the firm with more private and less public information faces a higher expected return by investors, because private information makes it more

difficult for uninformed investors to 'infer the information from prices'. This increases uninformed investors' risk attached to a stock as compared to informed investors, who may better change the composition of their portfolio when new information arises. Hence private information creates a new form of systematic risk, and, in equilibrium, investors want to be compensated for bearing this risk. Therefore, more public information reduces this non-diversifiable information risk uninformed investors may have to take by holding a stock, and reduces their expected returns.

This conclusion has, however, been rejected by Hughes et al. (2007). Using a factor-model-based extension of the Easley and O'Hara (2004) model in which investors receive private signals that contain information about both systematic factors and idiosyncratic shocks, the authors demonstrated that the cost of capital is not affected by information asymmetry in cross-section since betas are not affected by idiosyncratic risks. They show that, in a large economy (with the number of assets and investors towards infinity), private information about systematic risk influences the market-wide factor risk premiums, with higher information asymmetry leading to a higher premium. However, private information about idiosyncratic risk does not affect the cost of capital as it is diversified. It affects risk premiums only as noise when investors are assessing signals about systematic factors. Christensen et al. (2010) built a two-period model with one risky asset that incorporates elements of the models by Easley and O'Hara (2004), Hughes et al. (2007), Lambert et al. (2007) and Lambert et al. (2012). They distinguish between the cost of equity capital for the period leading up to the release of information (denoted preposterior cost) and the period after the release (denoted ex post cost). The authors showed that the cost of capital remains unchanged by the release of information as the reduction in the cost of capital after the release of information (i.e. reduced uncertainty) is offset by an increased cost of capital in the period leading to the release (due to increased uncertainty). The authors argued that information disclosure simply allocates the fixed total risk premium over the two periods, but does not change it. Disclosure would only influence the timing when the uncertainty around the terminal dividend is resolved and reflected in prices. In a first setting with only public information, the

ex-ante cost of capital (comprising both periods) is unrelated to information disclosure, as the reduction in the ex post cost of capital by disclosure is accompanied by an increase in the preposterior cost of capital. In a second setting with both informed (having private information) and uninformed investors, the ex post risk premium is decreasing in the informativeness of the signal. In this setting, the reduction in the ex post risk premium comes from the higher average precision of the investors' rational equilibrium beliefs about the terminal dividend, and not from a higher required return linked to private information.

Clinch and Lombardi (2011) modified the model by Easley and O'Hara (2004) to analyse the case of endogenous information acquisition and provided support for their conclusions. Two scenarios were examined. First, in a one-firm setting the authors demonstrated that whether private information is associated with a higher cost of capital depends on the cost of information acquisition. Contrary to Christensen et al. (2010), they allowed the cost of acquiring private information to increase with the precision of this information, and showed that in this case an increase in private information is associated with an increasing cost of capital, thus confirming Easley and O'Hara (2004). Second, in a two-firm setting the authors postulated that information can only be obtained for both firms, not separately. They then showed that when the cost of information acquisition is fixed, the rate of return is increasing in private information when acquiring private information about one firm together with the acquired analysis and interpretation skills generates spillover effects in terms of information that can be used for the other firm as well.

Lambert et al. (2012) distinguish between information precision (the average quality of information the investors possess) and information asymmetry (differences in the quality or precision of information investors hold about a firm's cash flows), and showed that both influence the cost of capital in different ways. The average precision of information is found a key determinant of the cost of capital. Reducing information asymmetry in models based on perfect competition reduces the cost of capital because more information increases the average precision of information, which lowers the required rate of return, while information asymmetry has no effect. In models

based on imperfect competition, information asymmetry does influence the cost of capital by reducing the adverse selection problem, as pointed at by previous studies. In general, the results by Lambert et al. (2012) showed that asymmetry reduction gives less informed investors access to information that was previously inside information, so increasing their average precision and reducing the cost of capital. But reducing information asymmetry may have the opposite effect of increasing the cost of capital because of the resulting decreasing average information precision. The authors emphasise, however, that it might be difficult to separate the effects of information asymmetry and precision in an empirical setting, as many of the factors associated with lowering information asymmetry are potentially related to increasing information precision, too.

4.2.2.4 Information quality

Another suggestion for a link between information and the cost of capital has been provided by Leuz and Verrecchia (2005) and has subsequently been used in Lambert et al. (2007). The modelling by Leuz and Verrecchia (2005) demonstrated that the quality of information directly impacts upon the cost of capital.[1] Financial reporting in the capital market has a coordinating role between the firm and investors concerning a company's investment opportunities and decisions. With low information quality, investors will anticipate capital misallocation by the firm, thus increase the required rate of return. Thus higher quality information provided by firms about these opportunities helps better aligning firms and investors, reducing the risk of misalignment of firms' investment decisions. This affects the cost of capital as the investors will apply a lower required rate of return. Better information quality does not change the covariance of the firm's cash flows with those of the market, as this is influenced by the project itself. But better information quality improves the efficiency of the implementation of an investment, thus will increase the expectations about future cash flows, from which follows a reduced required rate of return.

[1] Leuz and Verrecchia (2005) see information quality as the quality of a firm's report on its investment opportunities.

Lambert et al. (2007) used this reasoning and demonstrated a direct and indirect effect of information on the cost of capital. The authors showed that higher quality information about a firm's future cash flows directly influences the assessed covariances with other firms' cash flows, thereby reducing the firm's cost of capital. Moreover, the authors also demonstrated an indirect effect of information quality by its influence on a firm's real decisions. They showed that an increase in disclosure that reduces managerial misappropriation of a firm's cash flows increases firm value and reduces the cost of capital. In addition, information quality influences a companies' real decisions (such as production or investment). This affects the ratio of the expected future cash flow to the non-diversifiable covariance risk, thereby also affecting the cost of capital.

Leuz and Wysocki (2006) stressed the similarity of the result by Lambert et al. (2007) with findings in the agency theory literature which states that stronger corporate governance and increased transparency lead managers to reduce their misappropriation and take better decisions, and consequentially leads to improved expectations about future cash flows.

4.3 Attributions and the cost of capital

Based on the theoretical foundation discussed above, this section develops the argument for an association between the disclosure of attribution statements and the cost of capital.

The previous section has laid out that information asymmetry between firms and the capital market leads investors to require a higher return, and that disclosure can help reduce this information asymmetry and lower the required rate of return (see e.g. Lev 1992; Bartov and Bodnar 1996; Healy et al. 1999; Dye 2001). In this context, it can be argued that the disclosure of management's attribution statements to corporate performance outcomes can contribute to reducing information asymmetry between the firm and the capital market, and affect the firm's cost of capital.

Management's attribution statements can provide investors with valuable infor-

mation for the analysis of a firm's performance outcomes. Attribution statements set the financial statement into context and can help investors assess the results by increasing their understanding of the reasons for changes in the financial statement, of factors influencing performance, and of the viability of a company's strategy (ASB 2006; Cole and Jones 2005; IASB 2010). This view is supported by Baginski et al. (2004, p. 2) who argue that management's explanations can increase the usefulness of the financial performance information they accompany because they can provide information to relate various influential internal and external factors, offering "additional information on known links between factors and profitability or by identifying additional factors to consider". Thus attribution statements can provide a specific insight into the reasons for firm performance which is not available from other sources, and that can be used by investors for firm valuation.

Further, the view taken by the IASB (2009, p. 15) is that "explanations are useful when they describe the relationship between the entity's results, management's objectives and management's strategies for achieving those objectives". Baginski et al. (2004, p. 2) make a similar point and suggest that attributions "... are potentially important information to investors who engage in strategic analysis of financial statement information". Since research findings show that investors place crucial importance on the assessment of the effectiveness of a firm's strategy (PriceWaterhouseCoopers 2007b), it can be argued that performance explanations can help investors to assess the results in light of the firm's strategy, and thereby affect the investors' assessment of firm value. Taken together, this suggests that attribution statements that explain a firm's performance outcomes from the viewpoint of management are useful information for investors in their assessment and valuation of shares, and hence can have an effect on the investors' required rate of return.

As discussed in the previous section 4.2, theoretical research suggests two main ways of how information disclosure can affect the cost of capital: either via (1) increasing liquidity of the stock and reducing transaction costs (Diamond and Verrecchia 1991, Welker 1995) or (2) a number of mechanisms that establish a direct link without reference to liquidity, such as disclosure's effect on estimation risk (Barry

and Brown 1985; Coles et al. 1995), or the effect of information precision (Lambert et al. 2012) and information quality (Leuz and Verrecchia 2005) on the cost of capital. Given that attribution statements are considered "a key component of a firm's disclosure strategy" (Barton and Mercer 2005, p. 513) and their perceived usefulness for valuing a firm, the above theoretical research presents a case to argue that there is an association between provision of attribution statements and the cost of capital. By providing information that can improve investors' understanding of the firm's performance and prospects and thereby influencing their assessment of firm value, the disclosure of attribution statements may therefore affect the cost of equity capital either by increasing liquidity of the stock and reducing transaction costs, or by a more direct way such as those suggested in the literature. In addition to this general proposition of a relationship between disclosure and the cost of capital, Barton and Mercer (2005) describe two ways how specifically attribution statement disclosure can affect the cost of capital. First, they suggest that analysts will assess the explanations' plausibility and from that draw their conclusions about the persistence of the firm's performance. This then influences analysts' assessment of firm value, which is reflected in the required rate of return. Second, the authors argue that attribution statements affect the cost of capital via their effect on management's reputation with the capital market. Barton and Mercer (2005) state that analysts and investors use the quality of a firm's disclosures to make inferences about management, which impacts on management's reputation. The authors argue that in this assessment process, performance explanations will be particularly important to determine management's reputation as management has leeway in deciding how to explain the outcomes and how much detail they provide. Investors will therefore assess the performance explanations as to their plausibility, and the plausibility of these explanations will then affect management's reputation. This reputation will, in turn, affect management's credibility in communicating information to the capital market. On that basis, Barton and Mercer (2005) argue that the credibility of the information disclosed affects the cost of capital, since credibility of information constitutes firm-specific information risk, and research evidence shows that information

risk is non-diversifiable and affects the cost of capital (e.g. Botosan 1997, Easley et al. 2002).

The findings by a number of empirical studies also suggest that the provision of attribution statements influences the required rate of return. For example, Barton and Mercer (2005) provided evidence that management's attribution statements influence financial analysts' earnings forecasts and stock valuations. Moreover, a number of studies (Baginski et al. 2000; Baginski et al. 2004; Baginski et al. 2008; Kimbrough and Wang 2009) found that stock prices react stronger to the announcement of management earnings forecasts that are accompanied by attribution statements. So these findings demonstrate that performance explanations can influence the required rate of return.

Taken together, in light of the theoretical suggestions of how attribution statements can affect the cost of capital, and empirical findings that attribution statements influence investors' assessment of firm value and as a consequence affect the required rate of return, there is reason to argue that the disclosure of attribution statements will affect the cost of capital.

The next section reviews the empirical literature on disclosure and the cost of capital in order to bring to light what research to date has found regarding the association between attribution statements and the cost of capital.

4.4 Empirical literature on disclosure and cost of capital

4.4.1 Indirect measures of the cost of capital and disclosure

Several studies have examined the relation of firms' disclosure policy with the bid-ask-spread as a proxy for liquidity and transaction costs (e.g. Welker 1995; Heflin et al. 2005; Healy et al. 1999; Gruening 2011; Leuz and Verrecchia 2000; Gassen and Sellhorn 2006).

Using a sample of NYSE-listed firm from 1983-1990, Welker (1995) demonstrated

that firms whose disclosures received higher ratings by analysts have lower spreads. Heflin et al. (2005) confirmed this negative association for their 1988-1992 sample of FAF (Financial Analysts' Federation) financial analysts' disclosure ratings. Analysing the bid-ask spreads adjusted for depth quotes[2], the authors revealed that better rated disclosures are associated with lower depth-adjusted spreads. Further evidence for this association was provided by e.g. Healy et al. (1999). Healy et al. (1999) analysed a time series of AIMR disclosure ratings for a sample of 97 US firms which showed significant and sustained improvements in disclosure for the period between 1980 and 1990. The authors found that the increase in disclosure was associated with a reduction of the bid-ask spread.

Gruening (2011) provided evidence for the effect of disclosure on the bid-ask spread in a sample of 390 annual reports of German listed companies for the year 2005. As proxy for liquidity, share turnover and the bid-ask-spread were used. The cost of equity capital was proxied by ex-post abnormal returns and market value (exploiting the inverse relationship between market value and cost of equity capital). The results showed a significant positive (negative) association between disclosure and share turnover (bid-ask spread). Also, the results demonstrated a significant negative (positive) association between disclosure and abnormal returns (market value, meaning a lower cost of equity).

Leuz and Verrecchia (2000) examined a sample of DAX listed firms from the year 1998 that had switched to either IAS or US GAAP. As German GAAP is seen as providing less disclosure than IAS or US-GAAP, the authors posited that a switch is a substantial commitment to more disclosure and firms should therefore experience economic benefits from enhanced disclosure. The authors found that firms that switched to either of those two benefited from a lower bid-ask spread and higher share turnover afterwards as compared to firms that did not switch. Similarly, Gassen and Sellhorn (2006) examined a matched sample of 708 German firms that voluntarily adopted IFRS and those that did not for the period of 1998-2004. The authors

[2]Depth quotes are a component of market liquidity and indicate the maximum number of shares that can be traded at a specific bid and ask price; orders that are larger than the depth that is quoted might get filled at less favourable rates (see Heflin et al. 2005).

reported that IFRS adopters had a lower bid-ask-spread than the non-adopting firms.

4.4.2 Direct measures of the cost of capital and disclosure

A large and more recent stream of research uses direct estimates of the cost of equity capital, based on methods to calculate an implied cost of equity capital.[3] In order to identify the gap in current research, the review of the literature is presented in two categories. First, studies that analyse the association between the cost of capital and a measure of overall corporate disclosure, chiefly in the annual report, are reviewed. Second, studies that focus on specific types of corporate information disclosure are reviewed. This will help establish the state of current research on the association between the cost of capital and the disclosure of attribution statements.

4.4.2.1 Studies on overall corporate disclosure

A number of studies has investigated the association between the cost of capital and the overall level of corporate disclosure (e.g. Botosan 1997; Hail 2002; Espinosa and Trombetta 2007). Botosan (1997) analysed a sample of 122 firms from the US machinery industry in 1990 and used a self-constructed disclosure measure based on firms' voluntary disclosure in annual reports. The multiple regression results revealed a negative association between disclosure level and the cost of capital, but only for firms with low analyst following. For firms with high analyst following the relation was not significant.

Hail (2002) investigated a sample of 73 Swiss-listed firms and found a negative relationship between voluntary disclosure in the annual report and the cost of capital. Firms providing the highest levels of disclosures exhibited a cost of equity capital that is between 1.8% and 2.4% lower than the sample firms with the lowest disclosure scores.[4] Botosan (2006) criticised the study because the method used to calculate the cost of equity capital, the Gebhardt et al. (2001) method, does not produce reliable results and shows erratic patterns of association with risk measures. Francis,

[3] See chapter 5, section 6.3 for a review and discussion of these methods.

[4] Hail (2002) used a disclosure index based on disclosure ratings by the Swiss Banking Institute and the University of Zurich.

Khurana and Pereira (2005) used a sample of 672 firms from 34 countries to analyse the relationship between disclosure, the need for external financing and the cost of capital for non-US jurisdictions. The authors used disclosure scores provided by the CIFAR (Center for International Financial Analysis and Research) and the PEG model by Easton (2004) to calculate the cost of capital. The regression analysis showed that across all countries, firms operating in industries with a greater need for external financing have higher levels of disclosure and consequently lower costs of equity and cost of debt.

Gietzmann and Ireland (2005) analysed a sample of 301 UK firms from the IT sector for the period of 1993 to 2002. Using a self-constructed disclosure measure based on firms' announcements via the London Stock Exchanges' Regulatory News Service (RNS), the authors found a negative association between timely strategic disclosure and the cost of capital, but only for firms with an aggressive accounting policy (measured as positive discretionary accruals). Firms with a conservative accounting policy did not show any cost of capital benefit from more disclosure. Espinosa and Trombetta (2007) examined a sample of Spanish listed firms from 1998-2001 and consistent with Gietzmann and Ireland (2005) reported a negative association between disclosure in the annual report and the cost of capital, but only for aggressive, not for conservative firms.

Some studies have used indirect measures of disclosure quality. For instance, Francis et al. (2004) demonstrated that earnings attributes affect the cost of capital[5], considering earnings attributes as an expression of firm-specific information. They argued that earnings attributes convey information about free cash flows to common equity. Using a large sample covering firm year observations from 1975-2001 and cost of capital estimates published by Value Line, the authors showed that 'accounting-based' attributes explain more of the cross-sectional variation on cost of capital estimates than the 'market-based' attributes. Francis et al. (2008) also examined the relationship between earnings quality, disclosure and the cost of capi-

[5]The authors used seven earnings attributes separated into 'accounting-based' (accrual quality, earnings persistence, predictability and smoothness) and 'market-based' (value relevance, timeliness, and conservatism) attributes.

tal. Earnings quality was proxied by the common factor of accruals quality, earnings variability, and the absolute value of abnormal accruals. They reported a significant complementary relation of earnings quality and voluntary disclosure, such that once earnings quality is controlled, disclosure becomes insignificant for explaining cost of capital. First, the authors found that firms with higher earnings quality had a higher level of disclosure. Second, in tests not incorporating earnings quality, a negative association between their voluntary disclosure measure (based on the index by Botosan 1997) and the cost of capital was found. However, when earnings quality was included together with the disclosure measure as explanatory variable in the regression, disclosure became insignificantly related to the cost of capital.

Berger et al. (2006) demonstrated a negative association of the cost of capital with a self-constructed measure of information quality, which was based on the idea that investors see a firm's permanent earnings as the weighted average of the firm's earnings and the industry average earnings. The higher (lower) a firm's information quality, the more (less) weight the investor will put on the firm's earnings as opposed to industry level earnings. Using a large sample from 1972-2004 and three cost of capital measures (those used in Gebhardt et al. 2001, Easton 2004, Fama and French 1993), they found that the cost of capital is negatively related to information quality.

Hail and Leuz (2006) demonstrated that a country's disclosure and regulatory environment influences the cost of capital. Comparing a large sample of firms from 40 countries for the period of 1991-2001 and using four cost of capital measures (the models by Claus and Thomas 2001; Gebhardt et al. 2001; Ohlson and Juettner-Nauroth 2005; Easton 2004), they demonstrate a lower cost of capital for companies in countries with higher disclosure and security regulation along with better enforcement of the rules.

A number of studies have investigated the capital market effects surrounding the introduction of International Accounting Standards (IAS)/International Financial Reporting Standards (IRFS) in the European Union (EU) in 2005 based on the notion that IAS/IFRS are of higher quality than the standards existing in many EU member states. The studies could not find unequivocal evidence for a reduced cost of capital,

for both the voluntary period and the more recent mandatory period.

Cuijpers and Buijink (2005) examined a sample of 114 EU listed firms in 1999 which voluntarily either adopted IAS (80 firms) or US-GAAP (34) and a large control sample of 1679 EU-listed local GAAP users. No evidence for a lower cost of capital for the adopting firms was found, although they observed a slightly higher cost of capital for adopters as compared to a matched sample of local GAAP users. Similarly, Daske (2006) did not find evidence for a lower cost of capital focusing on the German context in which firms were allowed to use US-GAAP or IFRS before the EU required its mandatory application. The sample consisted of 735 German firms from 1993-2002 which either reported under German standards, IFRS or US-GAAP, and firms that switched to international or US standards during the sample period.

Christensen et al. (2007) suggested that the effect of mandatory IFRS introduction on UK firms will be different depending on the perceived benefits of adoption for a firm. To gauge benefits, the authors constructed a proxy with characteristics of German firms that adopted IFRS voluntarily before 2005 (larger firms, more foreign sales exposure, less leverage). The results demonstrated that UK firms that shared these characteristics had stronger stock price reactions to announcements favourable to IFRS becoming mandatory. Further, while there was a general upward trend in the cost of equity during the sample period, UK firms that shared the characteristics had a lower increase in the cost of capital than the other firms.

Some studies have also investigated the role of private vs. public information in affecting the cost of capital (e.g. Easley et al. 2002; Mohanram and Rajgopal 2009; Botosan et al. 2004). The results are mixed. For instance, Easley et al. (2002) have tested the theoretical proposition published in Easley and O'Hara (2004) that when comparing two identical stocks, investors require a higher return for the stock surrounded by more private and less public information. Easley et al. (2002) constructed a measure of the probability of information-based trading of stocks (PIN) to measure the extent of private information and demonstrated that securities with a higher probability of information based trading exhibit a higher expected rate of return. However, Mohanram and Rajgopal (2009) did not find evidence that PIN is

a priced risk factor. Using 4 different tests[6] , neither of those provided clear support for the findings by Easley et al. (2002) and Easley and O'Hara (2004). Replicating the study by Easley et al. (2002), they showed that these findings are restricted to a sub period of the sample used for that study. Botosan et al. (2004) showed that the precision of public vs. private information has an opposite impact on the cost of capital. They found a negative association of more precise public information with the cost of capital, but a positive association with more precise private information. The magnitude of the effects was such that the cost of capital increasing influence of private information far outweighed the benefits of public information.

4.4.2.2 Studies on specific types of information disclosure

A number of studies have focused on the effect of specific types of information on the cost of capital (e.g. Richardson and Welker 2001; Muino and Trombetta 2009; Dhaliwal et al. 2011; Ghoul et al. 2011). Richardson and Welker (2001) investigated the relation between firms' social and financial disclosures and the cost of capital in the Canadian environment using a time series of firm observations from the period of 1990 to 1992. The authors used disclosure ratings provided by the SMAC (Society of Management Accountants of Canada) and the University of Quebec. They found that financial disclosure was negatively associated with the cost of capital. Furthermore, confirming the findings by Botosan (1997) on the role of analyst following in the association between disclosure and the cost of capital, the authors found that firms followed by fewer analysts benefited more from increasing disclosure in terms of a lower cost of capital. However, they reported that social disclosures were positively associated with the cost of capital. Contrary findings for social disclosures have come from Dhaliwal et al. (2011) who investigated voluntary disclosure of standalone Corporate Social Responsibility (CSR) reports and its association with the cost of equity capital. The study used a sample of 1190 first-time standalone CSR reports of 294 US firms for the period of 1993-2007 and measured the cost of equity capital as the mean value of estimations based on three different implied cost of equity

[6]Time series and cross-sectional tests of returns on PIN factor loadings and the Fama and French (1993) 3-factor model and the extended 4-factor model.

capital models (the models by Gebhardt et al. 2001, Claus and Thomas 2001, Easton 2004). The results demonstrated that firms with a high cost of equity capital in the previous year were significantly more likely to voluntarily disclose standalone CSR reports. Further, issuing CSR reports for the first time showed a significantly negative association with the cost of equity capital, but only for those firms with superior CSR performance (as measured by ratings of CSR performance), not for others. Similar results were reported by Ghoul et al. (2011) based on an analysis of CSR disclosures in 12,915 firm year observations by 2,809 US firms for the period of 1992 to 2007. Measuring the cost of equity capital with 4 different methods (Gebhardt et al. 2001; Claus and Thomas 2001; Easton 2004; Ohlson and Juettner-Nauroth 2005), the authors found that firms with higher CSR disclosure scores had a lower cost of equity capital. Further, breaking down the CSR disclosures into different components, the authors found a negative association between the cost of equity capital and better scores for employee relations, environmental policies, and product strategies, while better scores on community relations, diversity, and human rights did not affect the cost of equity capital.

Botosan and Plumlee (2002) demonstrated that the cost of capital may increase or decrease depending on the type of disclosure considered. The authors extended the Botosan (1997) study and analysed three different types of disclosures: annual report disclosures, more timely disclosures (quarterly reports and other publications), and investor relations. The study used a sample from a ten-year period (1986-1996). They found that the association between the cost of equity capital and disclosure depended on the type of disclosure. Annual report disclosures showed the expected negative association, but for more timely disclosures - quarterly reports or other publications - a positive association with the cost of equity capital was observed. Finally, investor relations activities were not associated with the cost of capital.

Muino and Trombetta (2009) analysed whether the disclosure of distorted graphs in annual reports affects the cost of capital using a sample of 259 firm-year observations of 67 firms listed at the Madrid Stock Exchange from the years 1996-2002. They used the Easton (2004) PEG model and realised returns as the measure of the

cost of equity capital, whilst graph distortion was measured with the Relative Graph Discrepancy (RGD) index developed by Mather et al. (2005). Graph distortion is seen as the degree of consistency/inconsistency of financial information presented in graphs with the underlying financial data. The authors also employed an overall disclosure index based on annual analyst rankings published in a Spanish business magazine. They found that favourably distorted graphs have a negative association with the cost of equity capital, yet the relationship was mitigated by an interaction effect of graph distortion and overall disclosure. For firms with low overall disclosure, there was a negative association between favourably distorted graphs and the cost of equity capital, while for firms with higher disclosure, the association turns positive. The authors suggested that at higher overall disclosure levels, the market would more easily uncover graph distortion and therefore increase the perceived risk, while at lower overall disclosure levels, distortion might not be detected. However, the study found no impact of graph distortion on realised returns.

Further evidence for a negative association between disclosure and the cost of capital has been provided by Poshakwale and Courtis (2005) for the financial sector. The study was carried out using a sample of annual reports of 135 European and Non-European (USA, Canada, Australia) banks from the period of 1995-1999. The disclosure measure was comprised of a total of 29 financial and nonfinancial performance measures that are particular to the banking industry and based on a survey by PwC. These measures were grouped into six categories (disclosures about strategy, customer and markets, people and reputation, risk management, financial position, financial performance). The authors found a negative association between disclosure of the performance measures and the cost of capital. Further analyses into the six disclosure categories showed that banks' disclosures about risk management had the strongest association with the cost of capital.

More recently, research has moved from studying the effect of quality or quantity of disclosures on the cost of capital to analysing the effect of disclosure content (e.g. Kothari et al. 2009; Kim and Shi 2011), termed "directional link" by Kothari et al. (2009). For instance, Kothari et al. (2009) have demonstrated that the cost of

capital effect depends on the content of the disclosures as well as on the credibility and timeliness of the source. Content analysing more than 100,000 disclosure reports (by management, analysts, and the business press) and measuring disclosure content as favourable or unfavourable news the authors found that, on an aggregate level, favourable (unfavourable) disclosures were significantly associated with a decrease (increase) in the cost of capital, providing evidence for the cost of capital being influenced by the content of disclosures, good or bad news. A separate analysis of the information sources showed that positive news conveyed by management were discounted by the market, possibly due to credibility concerns, and did not materially affect the cost of capital. Negative news, however, had no effect. Similarly, analysts' reports did not significantly influence the cost of capital (both positive and negative news). Again, it was suggested that this is due to analysts being perceived as not completely impartial. By contrast, financial press reports were found to significantly affect the cost of capital and two other risk measures, stock return volatility and dispersion in analyst forecast errors. The authors suggested that the press is seen as much more credible and objective, as well as being a more timely source of information than, e.g., analysts reports.

Kim and Shi (2011) investigated the directional effect of voluntary disclosure on the cost of equity capital by analysing the disclosure of management earnings forecasts (both good and bad news). They argued that bad (good) news forecasts would increase (decrease) investor uncertainty and lead to a higher (lower) cost of equity capital, and studied a sample of 1194 US management earnings forecasts, with 2004 non-forecasting observations as a benchmark. Using the Easton (2004) model to estimate the cost of equity capital, they compared the cost of equity capital of the sample firms one month before the forecast, one month after the forecast, and one month after the actual earnings announcement. In terms of the results, for the change in cost of equity capital one month prior to and after the forecast, firms with bad news showed a significant increase in the cost of equity capital, whereas there was no significant change in the cost of equity capital for good news and non-forecasting firms. Moreover, the magnitude of changes in the cost of equity capital for firms

with good news was significantly lower than for both bad news and non-forecasting firms. For changes in the cost of equity capital one month after the forecast to one month after the actual earnings announcement, the results showed that for bad news firms the change is insignificant, suggesting that the effect of the bad news at the announcement has already been pre-empted in the forecast.

4.5 Limitations of prior literature

In spite of numerous studies having investigated the relationship between disclosure and the cost of capital, it is important to further examine the issue for a number of reasons.

First, the results of prior studies are mixed, with some showing a negative association (e.g. Hail 2002; Poshakwale and Courtis 2005; Dhaliwal et al. 2011), others showing a positive relationship (e.g. Botosan and Plumlee 2002; Richardson and Welker 2001), and yet some show no association (e.g. Daske 2006). Many reasons have been put forward in the literature to explain these mixed findings. Some suggest that this is due to differences in the disclosure measures (e.g. Espinosa and Trombetta 2007), differences in the cost of capital measures (e.g. Botosan 2006), or that the high disclosure level in the US makes it more difficult to identify benefits from more disclosure in the US-based studies (e.g. Leuz and Verrecchia 2000; Core 2001; Hail 2002). Most importantly for this current study, the literature review in the previous section showed that while prior studies have examined different types of disclosures, ranging from overall disclosure (e.g. Botosan 1997; Espinosa and Trombetta 2007) to specific types of disclosure only, such as graphs (e.g. Muino and Trombetta 2009) or corporate social responsibility disclosures (e.g. Dhaliwal et al. 2011), currently evidence on the association between attribution statement disclosure and the cost of capital is virtually non-existent. This is despite the fact that standard setters and regulatory bodies see performance explanations as useful information for improving investors' economic decisions, hence require or encourage their provision (SEC 2003; ASB 2006), and that explanations of performance outcomes constitute a major part

of firms' narrative disclosures (Collins et al. 1993; PriceWaterhouseCoopers 2007a).

Also, the review of the attribution literature in chapter 2 has revealed that research on the effects of attribution statements is still scarce and has only been investigated by a few studies (e.g. Baginski et al. 2000, Baginski et al. 2004, Baginski et al. 2008, and Kimbrough and Wang 2009). These studies, however, focused on stock price reactions using an event study method and have not examined the cost of capital effect. Event studies only reflect the short-term impact but not the long-term effects, which are the most important for the firm (Barker 1998; Bruner et al. 1998; Daske et al. 2006). The cost of capital reflects the long-term perspective of the impact attributions have. The experiment with analysts by Barton and Mercer (2005) shows management's explanations affect their reputation with the market, and this in turn affects the firm's cost of capital. Barton and Mercer (2005) therefore suggest that studies should consider not only the market's short-term reactions to the announcement of results and attributions, but also investigate the effects on the cost of capital as analysts revise their beliefs following attributions for performance. There have been repeated calls for further research on the relation of disclosure and the cost of capital by both academic studies (e.g. Healy and Palepu 2001; Botosan 2006) and professional bodies (ICAEW 2004). This thesis responds to this call and the suggestion by Barton and Mercer (2005) by investigating another important aspect of disclosure, management's narrative explanations for corporate organisational outcomes.

Second, the studies on the effects of attribution statements have all been carried out in the US institutional environment, and no identifiable study has yet considered this issue in other settings. The US environment is characterised by prescriptive requirements (Collins et al. 1993; Clatworthy and Jones 2003) with some of the most demanding accounting and disclosure standards worldwide (Levitt 1998), and strong enforcement of rules (La Porta et al. 2006). By contrast, the UK and other countries have less demanding requirements (Ball et al. 2000, Clatworthy and Jones 2003; La Porta et al. 2006) so that it can be argued that disclosure levels in non US environments will be more variable. Since several studies (e.g. Leuz and Verrecchia 2000; Core 2001; Hail 2002) have suggested that this high disclosure environment

in the US would make it difficult to detect tangible cost of capital effects of more disclosure, therefore research needs to be carried out in non US settings such as the UK.

Additionally, the US is characterised by prevalence of litigation (Baginski et al. 2002; Clatworthy and Jones 2003) which might constrain attributions. Research has demonstrated that this litigation risk restricts US companies' disclosure behaviour (e.g.. Baginski et al. 2002; Rogers and Van Buskirk 2009), while litigation in the UK is rare (Ball et al. 2000, Clatworthy and Jones 2003), so that UK firms face less danger of litigation and have more leeway for presenting disclosure. As Clatworthy and Jones (2003, p. 172) suggest, "...it is commonly acknowledged that US accounting narratives are more constrained through a greater fear of litigation than their UK counterparts". Aerts and Tarca (2010) showed that these differences influence attribution statements. They provide evidence to suggest that US firms are more moderate in their attributions, thus less assertive and less defensive.[7] The firms used more formal language and gave more impersonal technical-accounting explanations than firms in the UK and Australia. Moreover, their explanations were more comprehensive and represented a higher proportion of disclosures contained in the Management Commentary.

To sum up, the limitations presented above suggest there is reason to further investigate the association between attribution statements and the cost of capital.

4.6 Development of hypotheses

This section develops the hypotheses about the effect of attribution statements on the cost of equity capital. The development is based on the theoretical framework that links disclosure and the cost of capital and the review of the empirical literature, both presented in this chapter.

There is reason to suggest that the disclosure of explanations for corporate performance outcomes influences a firm's cost of equity capital. The capital market

[7] Assertive means taking credit for good results, whereas defensive refers to blaming external factors for negative results (Aerts 1994).

uses attribution statements for decision making. For example, Barton and Mercer (2005) show in an experimental study that financial analysts use these statements for making and revising earnings forecasts and determining current share price. Also, a number of studies (Baginski et al. 2000; Baginski et al. 2004; Baginski et al. 2008; Kimbrough and Wang 2009) demonstrate that attribution statements are useful to market participants, as they find that stock price responses to management earnings forecasts and earnings announcements are stronger when accompanied by attribution statements. As management has an information advantage and can therefore give a unique insight on the reasons for performance that outside investors could not achieve based solely on their own analysis, it can be argued that attribution statements on the reasons for performance outcomes will affect information asymmetry between the firm and capital market participants. The findings by Baginski et al. (2000), Baginski et al. (2004), Baginski et al. (2008) and Kimbrough and Wang (2009) that stock prices react to the existence of attribution statements imply that attribution statements help to clarify performance outcomes and therefore reduce information asymmetry between the market and the company.

From a theoretical standpoint, as discussed in the previous sections of this chapter, reducing information asymmetry by disclosing information can reduce the cost of capital via (1) increasing liquidity of the stock and reducing transaction costs (Diamond and Verrecchia 1991, Welker 1995) or (2) a reduction in estimation risk faced by an investor when assessing the asset's payoff or return structure, thus lowering the required rate of return (Barry and Brown 1985; Coles et al. 1995). Empirically, numerous studies have provided evidence to support the suggestion that higher disclosure is associated with a lower cost of capital (e.g. Botosan 1997; Hail 2002; Francis, Khurana and Pereira 2005; Poshakwale and Courtis 2005; Hail and Leuz 2006; Berger et al. 2006; Ghoul et al. 2011; Dhaliwal et al. 2011).

With regard to attribution statements, disclosing performance explanations can increase investors' understanding of a company's operations, particularly in understanding better the sources and factors that influence performance from management's own perspectives. This reduces information asymmetry, and thus can lead to

a lower required rate of return. So based on the theoretical suggestion that higher disclosure may reduce the cost of capital, together with empirical evidence supporting this proposition, a negative association between attribution statement disclosure and the cost of equity capital can be suggested.

On the other hand, there is also experimental research suggesting that disclosing attribution statements may lead to a higher cost of equity capital. Disclosing attribution statements may actually exacerbate information asymmetry especially if they are not considered credible, and this may result in a higher cost of equity capital for the firm. Barton and Mercer (2005) demonstrate that plausible attributions lead analysts to provide higher earnings forecasts and stock valuations than if no attributions were provided. An example of a plausible explanation is the claim by insurance, airlines and tourism-related companies that the September 11 terrorist attacks affected their performance (see Barton and Mercer 2005). However, Barton and Mercer (2005) also show that when the attributions are considered implausible, analysts provide lower earnings forecasts and share price than when attributions were not provided. An example of an implausible explanation is a nationwide supermarket chain trying to blame the September 11 terrorist attacks for a drop in earnings, which led analysts to express serious doubts as to whether this could have affected the firm's performance (Farrell 2001). Barton and Mercer (2005) argue that analysts may consider implausible attributions as indicative of the bleak conditions of the firm. This will lead to lower earnings forecasts and share price, and therefore higher cost of equity capital. Furthermore, the evidence provided by McKenzie et al. (2002) suggests that weak justifications for a case may cause reactions opposite to those intended. In an experimental setting that involved legal judgements, the study demonstrated that weak evidence from either side, the defendant or the prosecution, leads the jury to favour and believe the other side's arguments, as a weak justification is seen as not very credible. The above discussion suggests the possibility of a positive association between attribution statements and the cost of equity capital, if market participants have doubts about the plausibility of the attributions.

In addition, more extensive attribution statements may not necessarily lead to a

lower cost of capital if, for example, the explanations reveal internal problems and/or point to issues that may cause problems for the firm in the future. Kothari et al. (2009) argue that the disclosure of unfavourable information would lead to an increase in the risk of a firm's expected future cash flows, with the consequence being a potentially higher cost of capital. Kothari et al. (2009) found empirical support for this notion, showing that the disclosure of unfavourable news is associated with a higher cost of equity capital. Kim and Shi (2011) provide similar evidence from an analysis of earnings forecasts. They find firms that announce bad news in their forecasts face a subsequent increase in their cost of capital.

The findings from these studies suggest that attribution statements that may indicate existing or potential future issues at a firm, that is negative information for investors, might be associated with an increase in a firm's cost of equity capital. The more information investors receive about the reasons for performance, the more they are able to see how the firm operates and are better able to assess if the factors that shaped performance in the past are likely to continue in the future. Whilst this may give investors more confidence in the future of the firm and therefore lower their required rate of return, these increased details may also lead investors to the conclusion that, for instance, the good past performance was influenced by factors that will not last in the future and were only temporary. Due to the non-recurring nature of these beneficial factors investors, as a consequence, may infer that the future of the firm is less bright than the past performance. This may lead them to discount future prospects and require a higher rate of return for investing in the firm. Against that background, it can be argued that the disclosure of attribution statements not necessarily contributes to a lower cost of equity capital, but may potentially lead to an increase. This proposition is consistent with the findings by Kothari et al. (2009) and Kim and Shi (2011) presented above, that the disclosure of negative information or of information that investors perceive to be negative for the future of the firm, may lead to an increase in the cost of equity capital. Thus information that investors perceive to be negative for the future prospects of the firm may lead them to requiring a higher rate of return, that is cost of equity capital.

Taken together, the above discussion provides reason to suggest that a positive association between attribution statement disclosure and the cost of equity capital is also possible.

Besides a positive or a negative association between attribution statements and the cost of equity capital, there is also reason to suggest that they might be unrelated. That is, attribution statements might not affect the cost of capital. Research on 'cheap talk' communication (e.g. Farrell 1995; Farrell and Rabin 1996; Bhattacharya and Krishnan 1999; Forsythe et al. 1999; Almazan et al. 2008) suggests the possibility that attribution statements may be ignored by investors, as investors may doubt the credibility and believability of these statements. 'Cheap talk' constitutes costless, non-binding and non-verifiable messages that may influence the behaviour of the message recipient (Farrell and Rabin 1996; Forsythe et al. 1999).[8] For a message to have an effect on the receiver's behaviour, the incentives of the sender and the receiver have to be closely aligned, otherwise the information is considered 'cheap talk' and ignored (Farrell 1995; Forsythe et al. 1999). Forsythe et al. (1999) argue that if the message about an asset's value emanates from a better informed party whose incentives are opposite to those of the receiver, the cheap talk information would not affect the receiver's behaviour. It is doubtful whether management and investors have the same incentives when it comes to financial reporting, as managers also consider their own interests when they provide information (Bhattacharya and Krishnan 1999; Forsythe et al. 1999; Barton and Mercer 2005). In the context of management's performance explanations, the review of the attribution literature in chapter 2 demonstrates that management frequently uses attribution statements in a self-serving way to promote their own causes. This potential bias in attribution statements might lead investors (the recipients) to question whether to rely on such information as input for firm valuation. Instead, investors may consider attribution statements to be cheap talk, since Bhattacharya and Krishnan (1999) argue that all disclosures other than 'hard financial data' are potential cheap talk because they are difficult to verify. The widespread use of biased attribution statements by manage-

[8] Bhattacharya and Krishnan (1999, p. 71) describe 'cheap talk' information as costless (no direct costs), non-binding (does not restrict strategic options), non-verifiable (to a court).

ment (see e.g. Staw et al. 1983; Huff and Schwenk 1990; Clatworthy and Jones 2003; Merkl-Davies et al. 2007) suggests that investors will be aware that the incentives of management for providing this type of information might be different from their own incentives, and management attributions therefore might provide a message of how management may want performance to be perceived, rather than providing an accurate description of events and the causal factors behind the performance outcomes. In light of this, investors might disregard management's attributions when they assess company performance. This, in turn, suggests that attribution statements and the cost of equity capital are unrelated.

This proposition is supported by findings by Kothari et al. (2009), whose results indicate that investors may have doubts about the credibility of information provided by management and therefore disregard it, as the study finds that positive news about a firm provided by management are not related to the cost of equity capital. Kothari et al. (2009) point out that management has incentives to give their disclosures a positive spin, so that investors may have doubts about the credibility and impartiality of this information. As a consequence, investors would discount the information and possibly not take it into consideration for valuing a stock. The study's results are consistent with this proposition, as information about the firm disclosed by management had no material effect on the cost of capital. This suggests that market participants may regard management's disclosures, and in particular attribution statements to performance outcomes as discussed above, as not credible and not useful for equity valuation.

On that basis, there is reason to suggest that attribution statement disclosure is unrelated to the firm's cost of equity capital, as investors may doubt the credibility of these explanations.

Taken together, the preceding discussion suggests that the association between attribution statements and the cost of equity capital is not clear. However, in light of the theoretical research that suggests that increased information disclosure can reduce information asymmetry and potentially lead to a reduction in the firm's cost of capital (e.g. Barry and Brown 1985; Amihud and Mendelson 1986; Diamond and

Verrecchia 1991; Handa and Linn 1993; Coles et al. 1995; Easley and O'Hara 2004), and that the findings by the vast majority of empirical studies on the relation between disclosure and the cost of capital support this notion and report a negative association (e.g. Botosan 1997; Hail 2002; Francis, Khurana and Pereira 2005; Poshakwale and Courtis 2005; Hail and Leuz 2006; Berger et al. 2006; Ghoul et al. 2011; Dhaliwal et al. 2011), the position taken in this thesis is that the disclosure of attribution statements can reduce information asymmetry and thereby contribute to lowering the cost of equity capital. On that basis, the following hypothesis is stated:

H1a: There is a negative association between attribution statement disclosure and a firm's cost of equity capital.

In addition to the hypothesis about the general effect of attributions on the cost of equity capital, findings by previous research suggest that attributions to internal and to external causes have their own separate effect on the cost of equity capital. Baginski et al. (2004) argue that either type of attribution can help investors understand the firm's performance and assess future prospects, as both internal reasons and external reasons for performance each give a different angle and aspect of information, thus provide useful information of their own. This notion is supported by findings by Baginski et al. (2000) who report that both internal and external attributions, independently of each other, affect stock returns.

With regard to external attribution statements, research into stock price reactions to the announcement of management earnings forecasts found that the price reaction is greater for those forecasts accompanied by an external attribution (Baginski et al. 2000), or is exclusively driven by external attributions while internal attributions have no effect on stock price reaction (Baginski et al. 2004). Baginski et al. (2004) argue that information about the firm's external environment, such as competition and regulation, is useful to investors for assessing future performance. This type of information can help investors make a better assessment of the potential influence of external forces, which the firm cannot control, on the firm's current and future

performance. Being better able to judge to what extent a firm's operations and performance are subject to external forces over which it has no control can help investors in making more precise and confident estimates of future earnings potential and equity value and thereby assist in investment decisions. That is, external attributions may reduce information asymmetry between the firm and investors. Moreover, Baginski et al. (2004) posit that the accuracy of external attributions is easier to verify, for instance economic conditions which can be observed easily, while attributions to firm-internal causes are not. Hence external attributions may be considered as more credible than internal attributions (see e.g. Baginski et al. 2004). As external factors are easily verifiable, investors might therefore consider external explanations in their assessment of firm performance to obtain a better idea of, as mentioned above, the level to which performance is influenced by the environment. Taken together, this suggests that providing attribution statements that give external reasons for performance are useful information for investors and can reduce information asymmetry between the firm and the capital market.

Consistent with hypothesis H1a and the theoretical literature that suggests that lowering information asymmetry via disclosure can lead to a lower risk premium (e.g. Barry and Brown 1985; Diamond and Verrecchia 1991; Handa and Linn 1993; Easley and O'Hara 2004), as well as the findings by numerous empirical studies that support this notion (e.g. Poshakwale and Courtis 2005; Hail and Leuz 2006; Ghoul et al. 2011; Dhaliwal et al. 2011), it can be argued that providing external attributions can reduce information asymmetry and thereby lower the risk premium, thus cost of equity capital. On that basis, the following hypothesis is stated:

H1b(i): There is a negative association between external attribution statements and a firm's cost of equity capital.

In addition, despite the suggestion by Baginski et al. (2004) that internal attribution statements may be difficult to verify, there is reason to argue that those statements can, nevertheless, also offer useful information for investors' decision making and contribute to lowering information asymmetry. Internal attributions can offer

exactly the type of information investors are looking for to gain a better understanding of a firm's operations, capabilities and its performance. This information can, for instance, give insight into internal operational processes, resources, or the effectiveness of implementing strategic plans. Baginski et al. (2004) also emphasise the importance of information on internal strategies and competencies for assessing performance and making investment decisions.

Internal attributions can offer firm-specific information to investors that cannot be obtained from explanations that use external reasons for performance, because external attributions can apply to any firm and do not necessarily carry firm-specific information. Attributions that explain performance outcomes with causes internal to the firm can therefore improve investors' insight needed for assessing a specific firm's operations and prospects, a dimension not offered by universally applicable external causes. Hence it can be argued that explanations that explain performance with reasons internal to a firm, providing insight into how the firm creates value and is run, are valuable information for judging firm performance. Moreover, internal attributions might reveal information about a firm's strategic plans and actions, which would be of high interest to analysts and investors and aid in their firm evaluation (see Baginski et al. 2004). Internal attributions can therefore also be highly relevant for investor decision making. Hence Baginski et al. (2004) argue that if firms provide internal attributions that can potentially be costly to the firm (by revealing information about strategic plans and actions), those might be considered as highly credible. This implies that internal attributions that may reveal information about, for instance, the firm's operations, strategies, or capabilities, are potentially very useful for investors and analysts for their assessments of firm performance and prospects. Taken together, this suggests that internal attribution statements can provide investors with information about the inside of specific firms and so provide a better understanding of the firm and its operations. This reduces information asymmetry between the firm and market participants, as investors are now better informed and can be more certain about their assessments of firm performance and prospects.

On that basis, it can be argued that, consistent with hypotheses H1a and H1b(i)

and the theoretical literature suggesting that lowering information asymmetry via disclosure may reduce the lower risk premium (e.g. Barry and Brown 1985; Diamond and Verrecchia 1991; Handa and Linn 1993; Easley and O'Hara 2004), as well as the findings by numerous empirical studies that support this notion (e.g. Poshakwale and Courtis 2005; Hail and Leuz 2006; Ghoul et al. 2011; Dhaliwal et al. 2011), providing internal attributions may lead to a lower risk premium for investing in the firm, thus cost of equity capital. Therefore, the following hypothesis is stated:

H1b(ii): There is a negative association between internal attribution statements and a firm's cost of equity capital.

There is also reason to suggest that the relationship between attribution statement disclosure in the annual report and the cost of equity capital is mitigated by the number of analysts following a firm. Research reported that the relationship between disclosure and the cost of capital can be influenced by an interaction of disclosure with factors such as a firm's accounting policy choice (Espinosa and Trombetta 2007) or the level of corporate social responsibility disclosures (Dhaliwal et al. 2011). More specifically, Botosan (1997) provided evidence that the effect of disclosure on the cost of capital is mitigated by the level of analyst following. While Botosan (1997) found no relationship between disclosure and the cost of capital for the overall sample, there was a significant negative relationship for firms with low analyst following. Richardson and Welker (2001) report confirming evidence.

Financial analysts take a central position in the capital market as information intermediaries between firms and the market for the analysis, evaluation, and distribution of firm information (Lang and Lundholm 1996; Healy and Palepu 2001; Breton and Taffler 2001). Firms use analysts to communicate with the market (Botosan 1997), and analysts provide additional information about firms independent from the firm's disclosures (Richardson and Welker 2001) that can be used by investors for decision making. From this follows that there is more information available about firms that are followed by more analysts (Hail 2002; Daske et al. 2006). This suggests that

for firms with higher analyst following, an important vehicle to communicate the reasons for performance outcomes will be analysts, as they carry out the task of investigating the reasons for performance and communicating their assessments to the market. This implies that for firms with higher analyst following, the importance to investors of performance explanations provided by management in the annual reports may be lower. This is because the reasons behind performance, including analysts' evaluations of this performance, can be gained from analysts' communications, hence reducing the need for investors to go to the annual report themselves and read the performance explanations. Therefore, for firms with higher analyst following, attribution statements disclosed in annual reports might not be that important for investor decision making.

For firms with lower analyst following, however, analysts as a source for independent analysis and interpretation of corporate performance outcomes are not available to the same extent. Investors therefore need to do more of their own research and evaluation. This has been stressed by Previts et al. (1994) who highlight that for firms with low analyst following, investors have to rely on their own research and the firm's accounts, as analysts' assessments of firm information are not available that may help them in their investment decisions. The importance of firms' own disclosures in case of low analyst following has further been emphasised by Richardson and Welker (2001, p. 600) who stressed that if there is not much information provided by analysts, "the firm's own disclosures are the key source of information". Richardson and Welker (2001) argue that in case of low analyst following, more disclosure can play out its full advantage. This suggests that, as investors still need to know the reasons behind performance outcomes in case there is less analyst coverage of a firm, they will have to use management's own explanations to inform their decision making. Hence, it can be argued that less analyst-provided processing and interpretation of reported performance outcomes will lead investors to attach more importance to analysing management's attribution statements to find out the reasons for performance. Hence the 'unique insight' (Cole and Jones 2005) that attribution statements can provide on the reasons for performance from management's point of

view might be more valuable for firms with low analyst following.

This suggests that the association between attribution statements and the cost of capital may be influenced by the number of analysts following a firm. Hence the following hypothesis is stated:

H2: The association between attribution statement disclosure and the cost of equity capital is stronger for firms with lower analyst following.

4.7 Summary and conclusion

This chapter has reviewed the literature on disclosure and the cost of capital and has developed the hypotheses regarding the effect of attribution statements on the cost of capital. First, the chapter has reviewed the theoretical literature that establishes a link between disclosure and the cost of capital. This provides the underlying theoretical foundation for establishing the association between attribution statements and the cost of capital. Second, the chapter has reviewed the empirical literature that has examined the link between the cost of capital and disclosure. This led to the identification of the gap in current research. Third, hypotheses about the association of attribution statement disclosure and a firm's cost of equity capital were formulated.

The next chapter presents the research methodology that was adopted to address the research objectives.

CHAPTER 5

METHODOLOGY

5.1 Introduction

The preceding chapters have set the scene for the thesis. The rationale for the investigation was laid out. The main objectives were specified as to investigate the determinants and consequences of attributions made in annual reports of UK listed companies. This chapter presents the research methodology adopted to answer the research objectives. It is structured as follows: First, the research approach of the thesis is outlined. Second, the sample selection procedure and the methods used for data collection are presented, followed by the data analysis methods. The chapter concludes with a summary.

5.2 Research philosophy

At the beginning of each inquiry process stands the decision on the research methodology to address the research questions. A research methodology is, as argued by Frankfort-Nachmias and Nachmias (1996, p. 13) "a system of explicit rules and procedures upon which research is based and against which claims for knowledge are evaluated". Each research methodology is based on an underlying paradigm, which is a philosophical position that takes a certain view of the world and sets out a way

of how this world can be made accessible by research. It operationalises a paradigm, thus is "a model, which entails theoretical principles as well as a framework that provides guidelines about how research is done in the context of a particular paradigm ... In simple terms, a methodology translates the principles of a paradigm into a research language, and shows how the world can be explained, handled, approached or studied" (Sarantakos 1998, p. 32). In the social sciences, the literature (e.g. Sarantakos 1998; Gill and Johnson 2002; Chua 1986) has distinguished three paradigms: a positivist, an interpretivist, and a critical perspective. These differ with regard to their assumptions about (1) ontology, (2) epistemology, and (3) views on the nature of science and its aims, which then translates into different approaches to research.

In terms of ontology, positivism is based on the assumption that there is an objective reality that can be made accessible by observation. Science is seen as "... the study of an objectively existing reality which lies outside the discourse of science" (Delanty 2005, p. 10). By contrast, interpretivism does not consider reality to be an objective fact but a social construct (Ryan et al. 2002). So in order to achieve an understanding of social phenomena, the researcher has to immerse himself into the individual's world, thereby recognising the influence of situational factors. A different stance is taken by critical research, which considers reality as a construct of social interaction. Therefore, social reality and human action are seen as not separate but mutually dependent (Chua 1986). Reality is, however, shaped by those with power, and constantly evolving and in a state of tension and conflict (Sarantakos 1998). With regard to epistemology, positivism is based on the scientific method, the approach usually used in the natural sciences (Gill and Johnson 2002). It adheres to the notion that only those phenomena that are observable, measurable and verifiable can be considered knowledge (Bryman 1988). Therefore, positivism assumes that the observer (subject) can be separated from the observed (object) (Gill and Johnson 2002). By contrast, interpretivism does not assume a distinction between observer and observed, as the researcher is part of the process of reality construction (Smith 2003). Interpretivist researchers emphasise that human beings, unlike objects of study in the natural sciences, hold beliefs about the world and give meanings to phenomena.

Human behaviour, then, is influenced by these perceptions as well as by the context within which individuals act, so that these subjective factors have to be considered if human action is to be examined and understood (Gill and Johnson 2002). Similarly, critical researchers do not adhere to the scientific method and its neutral approach to the study of a phenomenon. They stress that knowledge is socially constructed and a result of its history, thus there is no absolute existing knowledge, due to constant evolution changing the prevailing paradigm (Chua 1986; Gill and Johnson 2002).

Finally, concerning views on the nature of science and its aims, positivism follows a deductive approach. It is based on a highly structured process and starts out with using formal logic to establish a theory about how the phenomena to be investigated relate to each other. Subsequent empirical tests are used to confirm or disprove hypotheses regarding the relationship (Ngwenyama and Lee 1997; Gill and Johnson 2002). Positivist research stresses exact measurements and is value-free so it can objectively describe the overarching influence of general laws (Rocco et al. 2003). The aim is to make generalisations from the results to a wider population, to uncover universal laws. As such, the positivist approach is "... characterised by an ontological belief about a generalizable world waiting to be discovered and a high degree of reliance on definable theory with specific hypotheses to be tested..." (Baker and Bettner 1997, p. 295). The interpretivist paradigm, instead, is based on an inductive approach. Theory is not at the beginning of the process to guide the inquiry, but is the result of the research. In contrast to positivism, the aim is to develop theories to explain the meanings and perceptions based on the observations made (Denzin 1978). The interpretivist paradigm is trying to investigate how individuals perceive and attach meaning to their world (Burns 2000), that is, to understand the world from their perspective, not to uncover universal laws. As such, this paradigm does not assume that science is value-free. The critical perspective occupies a position in between positivism and interpretivism (Sarantakos 1998). Whilst recognising that individuals shape their environment, they are also subject to their environment. The distinct feature of this approach is that it goes beyond the attempts to approve/disprove or establish a theory. It is the belief that there are "prevailing systems of domination

which alienate[s] people from self-realisation“ (Chua 1986, p. 619). Individuals are considered to be held back in their development and reaching their potential by the dominant forces in society that secure their own status quo. Ryan et al. (2002) point out that, due its roots in critical theory and the influence of for example Habermas as well as that of Marx' works that stress social critique and critique of the capitalist society, the critical perspective accords a special and negative role to ideology in exercising dominance and maintaining the status quo in society. Hence this paradigm does not consider science to be value-free, and critical researchers are not only concerned with explaining and understanding a phenomenon, but aim at criticising the existing status quo perceived as unjust. Hence the aim of critical research is to uncover the dominance mechanisms, and ultimately try to change them (Ngwenyama and Lee 1997; Sarantakos 1998).

In accounting research, Chua (1986), Baker and Bettner (1997) and Ryan et al. (2002) group research into mainstream (positivist), critical and interpretive accounting research. The mainstream accounting research, using either archival data or experiments, with archival studies is the most widely used approach (Libby et al. 2002). Accounting research from a positivist perspective can be seen as

“a process of constructing precise and economical theories validated by well-designed tests using large and, as far as possible, unbiased samples. Replicability and critical evaluation of method and results are the hallmark of this type of research.” (Ryan et al. 2002, p. 8)

It relies heavily on quantitative methods, using statistical methods and economic models to investigate the phenomena of interest (Kam 1990). A large stream of this research is based on economic models as “abstract theoretical descriptions of reality” (Ryan et al. 2002, p. 27), to test assumed associations of variables, aiming at generalising the results. By contrast, interpretive accounting research is more concerned with accounting's socially constructed nature and dimension (Ryan et al. 2002). It pursues different objectives than positivist approaches in that it investigates the “...metaphorical dimensions of accounting and thereby gain [ing] an understanding denied by the more limited scope of the mainstream research perspec-

tives" (Baker and Bettner 1997, p. 305). Accounting is not only analysed from an economic perspective, but within the framework of society in which it is embedded, its implications for and interactions with humans and society. Accounting research from a critical perspective claims that "... accounting's essence can be best captured through an understanding of its impact on individuals, organizations and societies" (Baker and Bettner 1997, p. 305). Critical researchers see accounting as a means of control in society and in firms, giving those using it power to influence and shape the environment (Belkaoui 1992; Baker and Bettner 1997). Critical accounting research ultimately aims at organisational change (Gill and Johnson 2002).

In this thesis, a positivist approach is taken on several grounds. Firstly, the thesis investigates (1) the determinants of attribution statements and (2) the statements' association with the cost of capital in the capital market using mainly financial data to answer the research questions. This requires a positivist methodology because the other paradigms focus on studying the perceptions or actions of individuals, thus use a different type of data and analysis. Secondly, the thesis follows a deductive approach based on stating hypotheses about the association of (1) factors influencing the provision of attribution statements and (2) the statements' association with the cost of capital. The hypotheses are tested to measure how the variables relate to each other in general.

Thus the thesis seeks to establish a general relationship between the variables, in line with previous research (e.g. Cooke 1989; Coles et al. 1995; Botosan 1997; Aerts 2005; Gietzmann and Ireland 2005). As both the interpretivist and the critical perspective do not share the deductive approach with prior theorisation, they are not suitable. Thirdly, in order to measure the association between the variables, the thesis requires reality to be objectively measurable. For example, both the cost of capital and attributions are quantified. As the interpretive and critical approaches do not see reality as objectively observable, but more as a construct of human interaction, changeable and in part depending on the beholder, the approach to use is positivist. Finally, the thesis investigates an economic association of variables and does not attempt to relate this to a societal dimension within a broader context. By contrast,

interpretive research emphasises the organisational and societal aspects of accounting, and critical researchers focus on potential organisational change, which is clearly a different focus from what this study aims to achieve. The choice of a positivist methodology has implications for the research method of the thesis, which needs to be developed accordingly. The next section presents the research methods in the thesis.

5.3 Research approach

An important aspect of any research is to determine the appropriate research methods for addressing the research objectives. The appropriate method for any piece of investigation has to be considered in light of the methodology adopted. Two major approaches in research can be distinguished: quantitative and qualitative. The quantitative approach is closely associated with the positivist research tradition. Quantitative research is characterised by an attempt to conduct objective and value-free research, focused on the measurement of variables and their association based on a pre-defined, structured theoretical framework similar to the natural sciences (Gill and Johnson 2002; Silverman 2000). Quantitative research employs the language of the natural sciences; expressions concerned with 'control, variables, experiment, and measurement' (Bryman 1988) as well as the deductive approach, empirical investigations of hypotheses based on prior theory. The aim in this type of research is to make generalisations from the sample studied to the wider population (Silverman 2000). The methods used by quantitative research mirror its emphasis on quantification of variables, as data are mainly numerical (Creswell 2009). The prevailing methods are experiments, surveys, and statistical methods (Brannen 1992; Silverman 2000). Theories and hypotheses are mainly tested either via experiments which allow the controlled investigation of the effect of a single variable on other variables, or via surveys and questionnaires, to generate a lot of data for subsequent testing (Bryman 1988).

Qualitative research, by contrast, is closely linked to the ontological assumptions

of interpretivism and emphasises exploring social phenomena that cannot be measured and quantified by statistics (Silverman 2000), such as deeper meanings and associations of phenomena. Theory does not underlie a qualitative investigation, but may result from it. As such, it features an inductive approach, undertaking empirical observation first and then deriving theories and explanations for the observed (Tucker et al. 1995; Gill and Johnson 2002). It starts with stating broad concepts regarding a phenomenon and then explores potential relationships between these concepts (Brannen 1992). Moreover, it accords an essential role to human beings and their actions as the object of study, thus it is concerned with studying individuals and their perception of the world (Burns 2000), which quantitative research does not. Qualitative research considers the phenomena under investigation within the context in which they appear, thus emphasises their subjective nature (Burns 2000), and has a tendency "...to describe the unfolding of social processes rather than the social structures that are often the focus of quantitative researchers" (Van Maanen 1979, p. 520). Methods usually employed include participant observation, action research, case studies or ethnography (Burns 2000). In addition, interviews, in general more in-depth and mainly semi- or unstructured in nature, constitute a large portion of the methods used. All these techniques are not for quantification purposes, but share the underlying notion that "...they can provide a 'deeper' understanding of social phenomena than would be obtained from purely quantitative data" (Silverman 2000, p. 8).

In light of the research questions, the thesis uses a quantitative approach, for three reasons. First, the thesis has adopted a positivist methodology, and the latter is closely linked to and operationalised through quantitative methods. Second, the thesis is based on prior theorisation to develop hypotheses about the association of variables, which are then subjected to empirical testing using data collected for that purpose. Third, the thesis seeks to generalise the results to a wider population, which is UK listed companies.

5.4 Model development

In order to address the research questions two ordinary least squares regression models are specified below. Model 1 examines the determinants of the provision of attribution statements in annual reports of listed firms in the UK. It expresses attribution disclosure as a function of corporate governance factors and firm-specific attributes as discussed in chapter 3. Model 2 analyses the association of attributions and the cost of capital, and controls for other factors known to be related with the cost of capital. These factors are beta, firm size, gearing, analyst following, book-to-market ratio. These are discussed below.

$$\begin{aligned} Attributions &= \beta_0 + \beta_1 PropNED + \beta_2 Dirown + \beta_3 ACSize + \beta_4 ACExp \\ &\quad + \beta_5 Size + \beta_6 AF + \beta_7 Gear + \beta_8 Profit + \beta_9 Perf \\ &\quad + \beta_{10} Issue + \epsilon \end{aligned} \tag{5.4.1}$$

Table 5.4.1: Definition of independent variables Model 1 and Model 2

PropNED	=	Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board
Dirown	=	Executive director share ownership, measured as the percentage of shares held by firm executive directors
ACSize	=	Audit committee size, measured as the number of directors on the audit committee
ACExp	=	Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee
Size	=	Firm size, measured as market value of equity at financial year end in £m
AF	=	Analyst following, measured as the number of analysts following a firm
Gear	=	Gearing ratio, measured as long-term debt divided by long-term debt plus shareholders' equity at financial year end
Profit	=	Firm profitability, measured as return on assets
Perf	=	Change in financial performance from the previous financial year, measured as indicator variable taking the value of 1 if the firm's operating profit has decreased from the previous year; 0 otherwise
Issue	=	Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise
Attributions	=	Attribution disclosure, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report
Beta	=	Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market
B/M	=	Firm book-to-market ratio, measured as book value of equity divided by market value of equity
*Attributions*AF*	=	Interaction variable of attribution disclosure and analyst following, operationalised as a multiplication of the attribution disclosure variable and analyst following
β	=	Regression coefficient
ϵ	=	Error term

$$CostofCapital = \beta_0 + \beta_1 Attributions + \beta_2 Beta + \beta_3 Size + \beta_4 Gear + \beta_5 AF + \beta_6 B/M + \beta_7 Attributions * AF + \epsilon \quad (5.4.2)$$

Control variables

Firm beta (*Beta*)

Beta is a measure for a firm's systematic risk and measures the sensitivity of a stock's return to variation in the return of the overall market (Fama and French 2004). The higher beta, the higher the return investors require to be compensated for that risk (Fabozzi and Modigliani 2003). Empirical accounting research has consistently confirmed that beta is positively correlated with estimations of an implied cost of equity capital (e.g., Botosan 1997; Hail 2002; Botosan and Plumlee 2002; Poshakwale and Courtis 2005). A positive association between beta and the cost of equity capital is expected in the regression.

Firm size (*Size*)

Prior research has found strong evidence that firm size and returns are correlated. Banz (1981) and Keim (1983) have first documented that smaller firms earn higher returns, thus are deemed riskier, and subsequent empirical research has provided further evidence for a substantial effect of size on returns (e.g. Fama and French 1992; Fama and French 1993). Likewise, size is negatively correlated with implied cost of equity capital (Botosan 1997; Gebhardt et al. 2001; Botosan and Plumlee 2005; Gode and Mohanram 2003). Studies on the relation of disclosure and the cost of capital (e.g. Botosan 1997; Botosan and Plumlee 2002; Hail 2002; Poshakwale and Courtis 2005; Francis, Khurana and Pereira 2005; Espinosa and Trombetta 2007) have included firm size in their models and found a negative relation with the cost of equity capital. From a theoretical perspective, more information is available for bigger firms than for smaller firms, thus they should have a lower risk attached and be associated with a lower cost of capital (Gebhardt et al. 2001). A negative association between firm size and the cost of equity capital is expected in the regression.

Gearing (*Gear*)

A firm's cost of equity capital should be increasing with its gearing as pointed out by, for instance, the work by Modigliani and Miller (1958) on capital structure.

Debt increases the risk for the equity investor as it adds a financial risk in addition to the operating risk attached to investing in a stock. That means a firm with debt has a higher systematic risk than a purely equity financed company (Bessler et al. 2007). The higher the leverage, the higher the risk the firm may default and thus the risk of stockholders to miss out, leading investors to require higher returns (Fama and Miller 1972). Empirical research has confirmed a positive relation of leverage with realised returns (e.g. Fama and French 1992) and measures of implied cost of equity capital (e.g. Gebhardt et al. 2001; Hail 2002; Gietzmann and Ireland 2005). A positive association between gearing and the cost of equity capital is expected in the regression.

Analyst following (*AF*)

The number of analysts following a firm is included as prior studies (e.g. Gebhardt et al. 2001; Richardson and Welker 2001; Daske et al. 2006) have repeatedly reported a significant negative association of analyst following with implied cost of equity capital measures. Research has also shown that there is a negative association between the cost of equity capital and disclosure level for firms with low analyst following (e.g. Botosan 1997; Richardson and Welker 2001). A negative association between analyst following and the cost of equity capital is expected in the regression.

Book-to-Market value of equity (B/M)

The ratio of a firm's book value of equity to its market value (B/M) is included as research has consistently found evidence that firms with high B/M ratios earn higher average returns (e.g. Stattman 1980; Rosenberg et al. 1985, Fama and French 1992; Fama and French 1993), and research using estimates of implied cost of equity capital has repeatedly documented a systematic and significant positive relationship with their cost of capital measures (e.g. Gebhardt et al. 2001; Francis et al. 2004; Botosan and Plumlee 2005; Daske et al. 2006; Hail and Leuz 2006).

The literature (see e.g. La Porta 1996; Daske et al. 2006) suggests that the B/M effect may either be the result of stocks being mispriced by investors, so that stocks with high B/M ('value stocks') are priced too low and low B/M stocks ('growth

stocks') are priced too high, and B/M captures this effect (e.g. Lakonishok et al. 1994); or the B/M ratio may proxy for underlying risk factors (e.g. Fama and French 1992), so that high B/M stocks will have higher expected returns. A positive association of B/M with the cost of equity capital is expected in the regression.

5.5 Sample selection

The thesis is based on a cross-sectional analysis of a sample of firms listed on the London Stock Exchange (LSE) in the year 2006. The population of firms from which the sample is drawn consists of all UK listed companies on the London Stock Exchange (LSE). There were 3200 firms listed on the LSE at 31 December 2006.[1] From this population, all overseas listed firms as well as listings from the Alternative Investment Market (AIM) and Professional Securities Market (debt and depository receipts) were removed, resulting in 1276 firms. In a next step, all bonds, fixed interest (debentures and loans, convertibles, preference) and listings of equity and non equity investment instruments and firms from the financial and the real estate sector were removed[2], leaving a total of 572 firms.

Adequate sample size depends on various factors such as population characteristics, required level of accuracy and standard error, the use of statistical techniques, or resources available (Frankfort-Nachmias and Nachmias 1996; Sarantakos 1998; Saunders et al. 2003). Various ways to determine an adequate sample size are used in the literature. For instance, it can be derived from a table based on the desired accuracy (see, e.g. Krejcie and Morgan 1970 and de Vaus 1986) or calculated using specific formulae (see, e.g. Frankfort-Nachmias and Nachmias 1996; Robson

[1] http://www.londonstockexchange.com/statistics/historic/company-files/company-files.htm; LSE 2009.

[2] Firms from the financial sector are excluded (1) due to the nature of their operations which makes their financial reports difficult to compare to other sectors, and (2) they operate in a more regulated environment and are subject to additional regulatory requirements; for that reason, firms from the financial sector are often excluded in disclosure studies, see e.g. Hail (2002); Cohen (2008). Similarly, the real estate sector is excluded as these listings are property investment vehicles, holdings, trusts, or Real Estate Investment Trusts (REITS), thus their operations are not directly comparable, and their financial reports exhibit a different structure with an emphasis on different performance items that makes it difficult to apply the attribution checklist.

2002). For economic modelling, the size of the sample should relate to the number of independent variables in the model. Various general rules have been suggested in the literature, e.g. a minimum of at least 5 observations per independent variable (Bartlett et al. 2001), a ratio of at least 10 observations (e.g. Bartlett et al. 2001; Sekaran 2003) or 15 observations (Stevens 2002) per independent variable. Harris (1975) has recommended the number of observations should be 50 plus the number of independent variables, whereas Green (1991) has suggested the simple rule that if the aim is to test independent variables individually, the sample size should be N> 104+m (with N=number of observations, and m=number of independent variables). Tabachnick and Fidell (1989) have argued that at least 100 observations are required to yield meaningful results and have suggested that 20 observations per independent variable are desirable.

Sample size in the study was determined using the table in Krejcie and Morgan (1970). For a population of 572, their table suggests a sample size of 234 observations. This corresponds to 41% of the population.

After the required sample size is determined, the sampling technique has to be selected. The literature distinguishes between two general approaches (Sarantakos 1998; Robson 2002): Probability (or random) sampling in which each unit has equal probability to be included in the sample so that the sample can be considered representative of the population, and non-probability sampling without equal probability of inclusion, thus not representative. The thesis uses probability sampling because it aims at generalising the findings, and generalisations for the population can only be made from probability samples as they are statistically representative of the population (Robson 2002; Creswell 2009). The technique for sampling can be either simple random or stratified. Random sampling picks the units from the population at random until the sample size is reached, whereas stratified sampling divides the population into groups (strata) according to their differing characteristics and random sampling is carried out in each stratum separately. When there are known differences in the population, stratified sampling is used (see Krippendorff 1980; Gill and Johnson 2002) to prevent the introduction of bias as the technique increases accuracy in the sam-

ple by providing a better representation of subpopulations (Moser and Kalton 1971; Frankfort-Nachmias and Nachmias 1996). The thesis uses stratified sampling since prior research has documented differences in attributional behavior between industries (Bettman and Weitz 1983; Aerts 2005; Aerts and Tarca 2010). These differences in the population, if not accounted for, introduce bias in the sample. Therefore, the population is divided into industries (strata) and a random sample is taken from each industry (stratum). Proportionate stratified sampling is used, that is the sample size in each stratum is proportionate to the population size of the stratum (Moser and Kalton 1971).

Firms were grouped into 21 industry sectors based on a review of the relevant literature.[3] The number of firms that were chosen from each industry (stratum) was calculated as the proportionate number of firms that had to be taken from each of the 21 industries (strata) out of the population of 572 firms to obtain the total sample of 234 firms required. The required number of firms selected from each industry is shown in Table 5.5.1.

[3]For instance, Industry-Classification-Benchmark (2010); Campbell (1996); Fama and French (1997); Botosan and Plumlee (2002); Lee et al. (2006); Daske et al. (2006); Daske et al. (2009); Mangena et al. (2010).

Table 5.5.1: Industry distribution of firms and required samples

Sector	Population	Sample	%
Aerospace and Defense	12	5	42%
Business Support Services	83	34	41%
Chemicals	14	6	43%
Construction and Construction Materials	22	9	41%
Consumer Goods (Personal + Leisure Goods)	19	8	42%
Electronic and Electrical Equipment	20	8	40%
Engineering (Automobiles and Parts + Industrial Engineering)	32	13	41%
Food and Beverages (Food Producers + Beverages + Tobacco)	28	12	43%
General Industrials	9	4	44%
Health Care Equipment and Services (Health care Providers + Medical Equipment)	18	7	39%
Household Goods	18	7	39%
IT (Software and Computing Services + Technology Hardware and Equipment)	65	26	40%
Media	38	16	42%
Mining and Basic Resources (Forestry and Paper + Industrial Metals)	18	7	39%
Oil and Gas (Oil and Gas Producers + Oil Equipment, Services and Distribution)	22	9	41%
Pharmaceuticals and Biotechnology	25	10	40%
Retailers (General + Food and Drug Retailers)	55	22	40%
Telecommunication (Mobile + Fixed Line Telecommunications)	9	4	44%
Transportation	14	6	43%
Travel and Leisure	37	15	41%
Utilities (Electricity + Gas, Water, and Multiutilities)	14	6	43%
Total	**572**	**234**	**41%**

This initial sample of 234 companies had to be reduced during the data collection process due to non-availability of data for 37 firms[4], leaving a sample of 197 companies. These sample firms were submitted to I/B/E/S to obtain analysts' forecasts for Earnings per share (EPS) and the number of analysts following the firm. This led to eliminating another 51 firms from the sample (32 due to non availability of data on I/B/E/S; and 19 because the EPS data did not fulfil the restrictions imposed by the model used to calculate the cost of capital.[5] From the remaining 146 companies,

[4]7 companies were in administration; 24 had been delisted due to mergers, takeovers or had been taken private; 4 firms reported in currencies other than £; 2 more firms had to be dropped as they had already been delisted in the year 2006 or were listed abroad.

[5]To calculate the cost of equity capital, the model requires positive earnings forecasts as well as EPS1 < EPS2 in order to solve the equation (see Easton 2004). Hence firms with negative forecasts or with one year ahead forecasts higher than two year ahead forecasts have to be excluded. See section 5.6.5 for details.

4 companies were removed due to non-disclosure of attribution statements (1 firm) and negative equity (3 firms) in order to avoid outlier problems.[6] This resulted in the final sample of 142 firms for the analysis. As the maximum number of independent variables in the study is 10 in regression Model 1, 142 observations is in line with the recommendations in the literature of a ratio of at least 10 observations (e.g. Bartlett et al. 2001; Sekaran 2003) or 15 observations (Stevens 2002) per independent variable. The distribution of the sample firms in the 21 industries is displayed in Table 5.5.2:

Table 5.5.2: Distribution of sample firms by industry

Sector	Number	%
Aerospace and Defense	5	3.5%
Business Support Services	23	16.1%
Chemicals	6	4.2%
Construction and Construction Materials	5	3.5%
Consumer Goods (Personal + Leisure Goods)	4	2.8%
Electronic and Electrical Equipment	6	4.2%
Engineering (Automobiles and Parts + Industrial Engineering)	6	4.2%
Food and Beverages (Food Producers + Beverages + Tobacco)	6	4.2%
General Industrials	4	2.8%
Health Care Equipment and Services (Health care Providers + Medical Equipment)	2	1.4%
Household Goods	5	3.5%
IT (Software and Computing Services + Technology Hardware and Equipment)	12	8.4%
Media	12	8.4%
Mining and Basic Resources (Forestry and Paper + Industrial Metals)	1	0.7%
Oil and Gas (Oil and Gas Producers + Oil Equipment, Services and Distribution)	6	4.2%
Pharmaceuticals and Biotechnology	1	0.7%
Retailers (General + Food and Drug Retailers)	17	11.9%
Telecommunication (Mobile + Fixed Line Telecommunications)	3	2.1%
Transportation	1	0.7%
Travel and Leisure	12	8.4%
Utilities (Electricity + Gas, Water, and Multiutilities)	5	3.5%
Total	**142**	**100%**

A full list of the sample firms is provided in Appendix A.1.

[6] See Tabachnick and Fidell 2007 for a discussion of the influence of outlying values in regression analysis.

5.6 Data collection methods

5.6.1 Data sources

The thesis uses data for the year 2006 and was collected from different sources. This year was chosen for analysis as it represents the most recent year of economic activity under regular conditions before the turmoil in the financial sector started to unfold in 2007 and the subsequent recession started affecting the wider economy in 2008. This ensures that the data is not influenced by the financial crisis. For example, attributions made for the year 2006 would not be influenced by the impact of the recession, but would likely reflect normal attributional behaviour. This ensures that the investigation into performance attributions and the cost of capital is not unduly influenced by the effects of this major external event on the firms' operations. Several potential data sources are available to the project, as firms can provide explanations for corporate performance outcomes in various forms. In more formal and regulated documents such as the annual report, interim reports, or the preliminary results announcements; or in less formal and regulated ways, such as during conference calls or analyst presentations, press releases, websites, or newsletters. This thesis uses the annual report for a number of reasons. The annual report is the main document with which a firm communicates with the outside and its investors (Adams and Harte 1998; Snidal 2007), it is published in regular intervals (Gray, Kouhy and Lavers 1995), and researchers can access it easier than other corporate documents (Woodward 1998). This ensures that the information provides a reliable base for investigation. The annual report has been used in previous disclosure studies (Singhvi and Desai 1971; Cooke 1989; Wallace et al. 1994; Wallace and Naser 1995; Gray, Meek and Roberts 1995; Hossain et al. 1995; Ho and Wong 2001; Haniffa and Cooke 2005) and attribution studies (e.g. Aerts 2005; Aerts and Tarca 2010; Tessarolo et al. 2010).[7] Causal attributions play a major role in the justification of performance and corporate accountability (Pfeffer 1981; Staw et al. 1983; Aerts 2005). Since annual reports

[7]Exceptions include, for instance, Baginski et al. (2000) and Baginski et al. (2004) who use management earnings forecasts, yet their focus lies on the market's reaction to the publication.

are considered the main document of communication with the outside (as reported above), it can be argued that the annual report is the main document for firms to justify performance and to provide accountability to investors. This view is seconded by the observation that the annual report has become a corporate Public Relations document firms use to promote a certain image and identity of themselves (Lee 1994; Stanton and Stanton 2002; Beattie et al. 2008). Attributions, as a primary means for justifying performance and convincing the public of the strength of the business, will therefore occupy an important part in the image-building role of the annual report.

More importantly, research suggests that analysts, amongst the major users of financial information (Schipper 1991) find the information contained in the annual report useful for valuation and investment decision making. For instance, Eng and Teo (1999) found that analysts revise their forecasts after the annual report is published, and Hope (2003) demonstrated that the accuracy of analysts' earnings forecasts is positively related to annual report disclosure level. Additional evidence for the usefulness of annual reports has been provided by studies on private shareholders. These demonstrated that private shareholders not only widely use the narrative parts of annual reports to obtain information (e.g. Jones 1996; Bartlett and Chandler 1997), but that the annual report contains information that is useful for investment decision making for non-sophisticated and smaller investors (e.g. Kaplan et al. 1990; Cready and Mynatt 1991; Rippington and Taffler 1995). The annual reports were obtained from various sources: Via download from the companies' websites, from databases (such as morningstar.co.uk; annualreports.com), and in case of non-availability online, by written request to firms.

5.6.2 Measuring causal attributions

5.6.2.1 Content analysis

The thesis uses content analysis in order to generate the measures of attributions for the subsequent statistical analysis. Content analysis is a research technique that allows a researcher to make inferences from data regarding the sender, the content,

or the receiver of the message (Weber 1990). The text under study is reduced to content categories and the units of analysis are classified into these categories based on similar meanings or connotations. The units of analysis may range from words or sentences to themes, paragraphs, or any other textual unit. After coding, the coded content is expressed in quantitative terms to allow further statistical analysis (Hackston and Milne 1996; Smith 2003). The content analysis technique is widely used in accounting and business research to examine corporate communication.[8] For example, it has been used to investigate social and environmental disclosures (see Milne and Adler 1999 and Duriau et al. 2007) or intellectual capital disclosures (e.g. Bozzolan et al. 2003; Beattie and Thomson 2007). With regard to causal attributional statements in corporate narratives, content analysis is the method of choice by prior investigations of firms' attributional behavior in annual reports (e.g., Staw et al. 1983; Bettman and Weitz 1983; Aerts 2005).

5.6.2.2 Development of research instrument

In order to measure attributions using the content analysis method, a checklist of the items to which firms may make attributions was developed. Marston and Shrives (1991) have emphasised that choosing the appropriate items to include in the index is crucial for its usefulness. Therefore, consistent with other previous studies (see e.g., Botosan 1997; Mangena and Pike 2005; Seah and Tarca 2006), the development of the checklist for this study started with a review of the existing literature on attributions (e.g. Staw et al. 1983; Bettman and Weitz 1983; Salancik and Meindl 1984; Ford 1985; Huff and Schwenk 1990; Clapham and Schwenk 1991; Clatworthy and Jones 2003; Baginski et al. 2000; Baginski et al. 2004; Lee et al. 2004; Aerts 1994; Aerts 2005; Hooghiemstra 2003; Aerts and Tarca 2010), other disclosure literature (e.g. Gray, Meek and Roberts 1995), in particular regarding Management Commentary (e.g. Robb et al. 2001; Beattie et al. 2004; Cole and Jones 2005), as well as official requirements by standard setters and law makers (e.g. SEC 2003; ASB 2006; Companies Act 2006; IASB 2010).

[8] See Jones and Shoemaker (1994) and Duriau et al. (2007), for reviews on research using content analysis in this area.

The review resulted in an initial list of 20 items of performance outcomes to which firms may give attributions, encompassing items from the income statement, balance sheet, cash flow statement. This checklist was pilot tested on a random sample of 15 annual reports of UK LSE-listed companies (not included in the final sample) to determine the items of corporate performance that firms give attributions to. Based on the results of the pilot, comparisons with the literature on attributions, and further discussions with the thesis supervisor, the checklist was adjusted to ensure that it reflects the potential attributions that firms make. This process lead to dropping 15 items, because (1) firms were not found to give explanations to them and (2) they were not universal enough to apply to every firm. The final checklist contains 5 items of corporate performance outcomes to which firms can be expected to provide attributions. These are *sales/revenues*, *costs*, *profit*, *cash flow*, *debt*.[9] The categories of *revenues*, *costs*, *profit* have also been used by previous research (e.g. Aerts 2005; Aerts and Tarca 2010). This instrument was used to measure disclosure of attributions in the annual reports. Appendix A.2 contains examples of attribution statements to each of these five performance outcome categories.

5.6.2.3 Identification of attribution statements

A content analysis procedure requires clear instructions according to which the variables of interest can be systematically identified and coded (see Weber 1990; Marston and Shrives 1991). This requires a clear definition of what constitutes an attribution and how they can be identified in the text, so as to guarantee a valid subsequent classification (Holsti 1996). Consistent with prior research on attributions (e.g. Bettman and Weitz 1983; Aerts 2005), a causal attributional statement is defined as:

A causal attributional statement is a sentence or phrase (or sentences) that explains a corporate performance outcome (e.g., profit, revenues, etc.) by linking it to a cause or a reason for that outcome.

Attributional statements can either be implicit or explicit. Explicit attributions

[9] These performance outcomes cover the areas of (1) results of operations, (2) financial position, and (3) liquidity, and are the three areas highlighted by standard setting bodies such as the SEC 2003, the ASB 2006, and the IASB 2009 to which firms shall provide explanations in their Management Commentaries.

state a clear causal relationship between an accounting outcome and a reason. They are often identifiable by searching for explicit connection words in the documents, such as 'because of', 'due to', or 'resulting from'. Previous research (e.g. Salancik and Meindl 1984; Clatworthy and Jones 2003; Aerts 2005) has successfully used these connecting words to locate causal attributions in annual reports. Implicit attributions, by contrast, do not directly and explicitly relate a cause to an outcome, nor do they use connecting words. Following Aerts (2005), implicit attributions are only taken into consideration if a cause-effect relationship can be identified from the document. In addition, as pointed out by Bettman and Weitz (1983), cause and effect have to be located closely to each other in the document, e.g. within one or two sentences, to fulfil the criterion of an attribution.

Performance outcomes can be explained by firm-internal reasons or external causes.[10] Internal reasons are those that the firm and management can influence or control, and include issues such as strategy, product pricing, introduction of new products (See Baginski et al. 2004). For example, in its 2006/7 annual report, British Airways attributes its positive performance to its cost controls: "For the first time ever we achieved an operating profit margin of 10 per cent in 2006/07. Continuing tight control of our costs played a crucial role in hitting this important target..." (British Airways 2007, p. 9). That is, performance is attributed to a factor that lies within the firm and that management can influence. A further example of a firm explaining a performance outcome with an internal reason can be found in the Vitec (2006, p. 10) annual report, which states that "operating profit before significant items at £1.7 million (2005: £1.2 million) was up 41.7% due to the Winter Olympics contract, better equipment utilisation and continued good cost control".

External causes that influence performance outcomes are factors the firm and management cannot control, such as overall state of the economy, changes in government regulations, competitors' actions (Baginski et al. 2004). For example, British Airways (2007, p. 14) attributes a negative outcome to external factors: "Landing fees and en route charges cost us £528 million, up 2.1 per cent. This was partly

[10] See the literature review in chapter 2.

due to rate increases and adverse exchange movements, primarily the stronger Euro". Similarly, AEA Technology (2006, p. 2) attributes their turnover growth to an external factor. The firm highlights that "the major driver for turnover growth was the increase in demand from Government and the Devolved Administrations for more policy advice and support in energy security and climate change as well as a strong continuation of the Government outsourcing trend".

5.6.2.4 Measures of the level of attribution

Using the checklist and criteria above, attribution statements were identified and a measure based on the word count for each attribution statement was developed. The word count measures the volume of explanations contained in the firm's narrative sections to capture the emphasis a firm places on explaining performance outcomes (Bettman and Weitz 1983) and to measure disclosure in more detail (Zeghal and Ahmed 1990) than other units.[11] The approach is similar to previous studies (e.g. Zeghal and Ahmed 1990; Deegan and Gordon 1996; Wilmshurst and Frost (2000); Haniffa and Cooke 2005; Li et al. 2008). A number of studies have applied the word count method to measure disclosure in annual reports. For example, Arshad et al. (2011) have used the number of words to measure the disclosure of Management Commentary. Li et al. (2008) applied the word count method to measure the extent of intellectual capital disclosure in UK listed companies' annual reports. Haniffa and Cooke (2005) and Zeghal and Ahmed (1990) used the word count measure to measure social responsibility disclosure.

To compute the measure, the number of words in all the attribution statements for each firm is divided by the total number of words in the narrative sections of the

[11]Various measures for disclosure volume in corporate documents are used in the literature: Number of sentences (e.g. Hackston and Milne 1996; Milne and Adler 1999) can be classified accurately and carry the meaning (Hackston and Milne 1996), but do not take into account grammatical differences, so that two different authors may use a similar number of words yet this may result in a different number of sentences (Unerman 2000); number of pages (e.g. Cowen et al. 1987; Deegan and Rankin 1997) and proportion of pages (e.g. Gray, Kouhy and Lavers 1995; Hackston and Milne 1996) allow for capturing not only narrative information but for instance additionally pictorial information (Gray, Kouhy and Lavers 1995), but have been criticised because they are exposed to the influence of various presentational factors such as font size, blank pages or column size (see e.g. Gray, Kouhy and Lavers 1995; Unerman 2000). Against the background of the advantages and limitations of the various approaches, measuring the number of words was considered to be most appropriate for this study.

firm's annual report, including the Operating and Financial Review (OFR), Chairman's Statement, and Chief Executive's Review, to form an attribution word count (*WCN*) index. This index expresses attribution statement provision at firm-level as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. Three indices were developed: the overall *WCN* index; and two subcategories, the internal word count (*WCN_INT*) and external wordcount (*WCN_EXT*). The two subcategories capture whether an internal or an external cause was given as an explanation and help address research questions 1, 2, 3 and 5 as specified in chapter 1. The formula used for computing the disclosure index is as follows:

$$WCN_j = \frac{\sum_{i=1}^{m_j} X_{ij}}{n_j}$$

where

WCN_j	=	Attribution wordcount index for *j*th firm
n_j	=	total wordcount in the narrative sections for *j*th firm
m_j	=	number of attribution statements for *j*th firm
X_{ij}	=	total wordcount of each attribution statement for *j*th firm

so that $0 \leqq WCN_j \leqq 1$

The use of word count has been justified in the literature (see Zeghal and Ahmed 1990; Deegan and Gordon 1996; Wilmshurst and Frost 2000). Wilmshurst and Frost (2000) have taken the view that the number of words used in disclosures can be considered as representing management's responsiveness to legitimising performance, because space in the annual report is limited, thus it will be filled with information which is perceived to be important to users. The more space a firm devotes to explaining its performance outcomes, the better investors will be able to understand

these outcomes and to draw conclusions about the future prospects of the entity.

This suggests that a wordcount based measure is particularly suited to capture the usefulness of attribution statement disclosure. Previous attribution studies did not take this dimension into consideration, measuring attributions as, for instance, the presence or absence of an attribution (e.g. Baginski et al. 2000; Baginski et al. 2004), the number of positive or negative attribution statements in relation to the total number of attributions (e.g. Aerts 2005), or sentences that contain attributions to the total number of sentences (e.g. Bettman and Weitz 1983; Luz et al. 2009). Yet in particular in the context of analysing the usefulness of attribution statements, a measure that captures the detail and the emphasis firms put to explain their performance outcomes in their annual reports can be considered a more relevant measure, as it can be argued that more detailed and elaborate explanations of performance outcomes will be more useful to investors than short concise explanations. This suggests that the measure used in this thesis offers a suitable gauge of usefulness of attribution statements.

5.6.2.5 Reliability and validity assessments of the disclosure measure

The attribution disclosure measure was tested for reliability and validity. The first test was for reliability. In order to produce valid and replicable inferences, it is of paramount importance that the content analysis procedure is reliable (Weber 1990; Milne and Adler 1999). Reliability refers to the property of the measuring instrument delivering the same results when used on the same data repeatedly by the same researcher or reproduced by another person (Weber 1990), and implies that category construction is based on shared meanings among the researchers involved (Gray, Kouhy and Lavers 1995). Weber (1990) has highlighted that ambiguity both of word meanings and in the construction of coding categories poses a problem when using content analysis, thus may reduce reliability. In addition, Beattie and Thomson (2007) have highlighted that reliability not only requires a coding instrument with reliable categories and coding rules, but it requires also consistency in coding using multiple coders and points in time. The reliability assessments used in this thesis

are described in the following. Krippendorff (1980) has distinguished three types of reliability: stability, reproducibility, accuracy. Stability means that coding results do not change over time when the same coder does repeated coding. As only one coder is involved, it is considered the weakest form of reliability. Reproducibility, or intercoder reliability, is more sophisticated and measures the level of agreement over the classification of items when more than one coder is involved. Accuracy is the highest level of reliability and measures the results of the coding in reference to a standard or norm. The thesis uses reproducibility (intercoder reliability) to measure the reliability of the coding instrument because (1) this is the minimum level a content analysis should achieve (Krippendorff 1980; Weber 1990), and (2) for the highest level, accuracy, there is no existing standards to which the coding could be compared.[12]

In order to assess the reproducibility of the content analysis procedure in this thesis, a second coder coded a randomly chosen 10 annual reports out of the total sample and the codings were compared to those of the main researcher. There is a number of methods available to calculate intercoder reliability (see Milne and Adler 1999), which range from a simple coefficient of agreement between the coders (that does not take into account agreement by chance) to measures taking account of chance agreements such as the Cohen (1960) kappa, the Scott (1955) pi, the Krippendorff (1980) alpha. This thesis uses the Krippendorff (1980) alpha to assess intercoder reliability since this measure takes chance agreement into consideration and can be used with data at all measurement levels (Lombard et al. 2003; Hayes and Krippendorff 2007). A level of agreement of 0.800 or better is seen as the threshold for the coding to be reliable (Krippendorff 1980; Neuendorf 2002). The results of the analysis are presented in Table 5.6.1.

[12]Weber (1990) remarks that accuracy is indeed rarely used in research as there are usually no existing standards as benchmark for comparison.

Table 5.6.1: Reliability test attribution disclosure measures (Krippendorff alpha)

	WCN	*WCN_INT*	*WCN_EXT*
Level of intercoder agreement	0.875	0.835	0.962

As can be seen from the Table, the level of agreement between the two coders is above 0.800 for each disclosure measure. These results suggest that the measures of attribution disclosure are reliable.

In addition to reliability of the content analysis procedure, the validity of the attribution word count index (*WCN*) was assessed. To assess whether *WCN* is a valid measure of attribution disclosure of companies, the association with firm size, gearing, and profitability was analysed. Previous research has found that these factors influence the disclosure of attribution statements (see Bettman and Weitz 1983; Salancik and Meindl 1984; Baginski et al. 2004; Baginski et al. 2008; Aerts 2005; Aerts and Tarca 2010; Aerts and Cheng 2011; see also chapter 3). If the attribution measure in this thesis is valid, it should show a positive association with firm size and gearing, and an association with profitability (positive or negative). That is, attribution disclosure level should be higher for firms which are larger and have higher gearing. For more profitable firms, it can be either higher or lower.

The results presented in Table 5.6.2 show that *WCN* is associated with firm size, consistent with results by previous studies (e.g. Baginski et al. 2004; Baginski et al. 2008). The negative association suggests that larger firms have a lower volume of performance explanations contained in their narrative reviews. This finding is consistent with Aerts (2005), who reported a negative association between firm size and defensive (excuses, denials) attribution tendencies. *WCN* also exhibits a negative association with profitability, indicating that more profitable firms also have a lower volume of performance explanations contained in their narrative reviews. The negative association between attribution disclosure and profitability is consistent with prior research (Salancik and Meindl 1984; Aerts 2005; Aerts and Tarca 2010). The insignificant association with *Gear* suggests that a firm's level of gearing does not

Table 5.6.2: Regression attribution wordcount index (*WCN*) on *Size*, *Gear*, *Profit*.

	Simple regression including Size			*Simple regression including Gear*			*Simple regression including Profit*			*Simple regression including Size, Gear, Profit*		
	B	Beta	t-value	B	Beta	t-value	B	Beta	t-value	B	Beta	t-value
Constant	1.061		3.508***	0.274		1.209	0.278		2.141**	1.133		3.572***
Size	-0.171	-0.286	-3.530***							-0.130	-0.232	-2.535**
Gear				-0.409	0.295	-1.145				-0.192	-0.045	-0.500
Profit							-4.639	-0.219	-2.694***	-3.250	-0.53	-1.749*
Adj. R2	7.5			0.2			4.1			8.2		
F-value	12.461			1.312			7.258			5.205		
Sign.	0.000			0.229			0.000			0.002		

*** Correlation significant at the 0.01% level (2-tailed); ** Correlation significant at the 0.05% level (2-tailed); * Correlation significant at the 0.10% level (2-tailed);
Adj. R2 = Explanatory power of the regression model for variance in *WCN*; F-value = Indicator for statistical significance of the regression model;
Sign. = Significance level for the predictive ability of the regression model; B = Unstandardised regression coefficient;
Beta = Standardised regression coefficient; t-value = t-statistics and significance level; Constant = Regression constant
Size = Firm size, measured as market value of equity at fiscal year end in £m. *Gear* = Gearing ratio, measured as long-term debt divided by long-term debt plus shareholders' equity at financial year end. *Profit (ROA)* = Firm profitability, measured as return on assets.

influence attribution disclosure. This is consistent with the results by Aerts and Tarca (2010), and mixed findings by Aerts 2005. Taken together, these results suggest that *WCN* is a reasonably valid measure of companies' attribution disclosure level.

5.6.3 Measurement of the cost of capital

The cost of equity capital can be seen as the discount rate investors use to discount a firm's future cash flows in order to determine current share price (Botosan and Plumlee 2005; Lee et al. 2006). Two approaches for the calculation of the cost of equity capital can be distinguished in the literature (see Botosan 2006). First, estimations based on an asset pricing model using a set of predetermined priced risk factors and historical returns. Second, estimations of an implied cost of equity capital based on a reformulation of the dividend discount formula. The next section discusses these approaches and then presents the model chosen for the thesis.

5.6.3.1 The cost of capital model

Methods using predetermined risk factors and realised returns

The methods in this group include the Capital Asset Pricing Model (CAPM) by Sharpe (1964) and Lintner (1965), its extension, the Fama and French (1992) and Fama and French (1993) Three-Factor Model, or the Arbitrage Pricing Theory (APT) Model by Ross (1976). They are all based on the notion that a predetermined set of risk factors may explain returns, and use average realised returns to calculate estimates of the expected rate of return. Yet despite the CAPMs prevalence in the finance and asset pricing literature and widespread use by companies (Bruner et al. 1998; Bessler et al. 2007), it is not suitable for this investigation. First, realised returns were shown to be poor proxies for expected returns (see Black 1995; Fama and French 1997; Elton 1999). Second, and more importantly, the model does not give a clear role for information and disclosure (Botosan 2006). It assumes that only variations in a firm's systematic risk (beta) explain variations in its cost of equity capital in cross-section, thus there is no role for differences in disclosure levels (Botosan 1997). This leads Botosan (2006, p. 32) to the conclusion that the CAPM's estimates of the cost of

equity capital "are not useful for empiricists analysing the link between disclosure and the cost of equity capital".

Methods estimating an implied cost of equity capital

A second and more recent stream in the literature has developed various models that estimate an implied cost of equity capital.[13] These models originate from the classic dividend discount formula that calculates a stock's value as the present value of its expected future dividends (cash flows) (see Gebhardt et al. 2001; Botosan 2006):

$$P_t = \sum_{i=1}^{\infty} \frac{E_t(D_{t+i})}{(1+r)^i}$$

where

P_t	=	Current stock price at time t
$E_t(D_{t+i})$	=	Expected future dividends at time t+1
r	=	Cost of equity capital

Rearranging the formula for r expresses the implied cost of equity capital as the internal rate of return that equates a company's current share price to the present value of its future cash flows (Gebhardt et al. 2001; Botosan 2006). The models can be grouped into two different approaches: (1) Those using a residual income valuation (RIV) approach such Gebhardt et al. (2001), and (2) those methods based on abnormal earnings growth (AEG) implemented by Gode and Mohanram (2003) and the price-earnings growth (PEG) model by Easton (2004).[14] The inputs to all those models are current stock price and analysts' consensus earnings forecasts (to proxy for future cash flows), but they differ mainly in their assumptions about the

[13] Easton (2007) offers a very comprehensive overview and critique of the methods, their implementation (and issues), as well as the limitations of their use.

[14] Additional methods such as the Gordon Growth Model Gordon and Gordon (1997) or the RIV-based method by Claus and Thomas (2001) are not discussed here as are they are infrequently used by the literature (e.g., by Hail and Leuz 2006, for the latter). The Claus and Thomas (2001) model is similar to the Gebhardt et al. (2001) method, yet differs in terms of assumptions regarding forecast horizon and earnings growth after the horizon.

forecast and growth rates and data requirements (Guay et al. 2005).[15] These methods are the methods of choice in accounting research on the link between disclosure and the cost of capital (e.g. Gietzmann and Ireland 2005; Hail and Leuz 2006; Daske 2006; Daske et al. 2008) because they allow, as Botosan (2006, p. 33) has argued, to explore "whether a particular type of risk is priced".[16]

The Residual Income Valuation model by Gebhardt et al. (2001)

The Residual Income Valuation model (RIV) by Gebhardt et al. (2001) (GLS) is an extension of the Dividend Discount Formula (see Ohlson 1995, and Feltham and Ohlson 1995) in that it incorporates annual report accounting data into the estimation of firm value. The model uses the clean surplus relation assumption[17] and abnormal earnings instead of dividends (it defines abnormal earnings as earnings minus the expected cost of equity capital from the prior period (Bessler et al. 2007)). Stock price is expressed as the sum of equity book value plus the discounted residual earnings. The drawback of this model is that the equations cannot be directly solved, but r has to be deduced by a mathematical iteration procedure (Botosan and Plumlee 2005). The model is calculated as follows:

$$P_t = B_t + \frac{FROE_{t+1} - r}{(1+r)} * B_t + \frac{FROE_{t+2} - r}{(1+r)^2} * B_{t+1} + TV \qquad (5.6.1)$$

Notation:

[15] Recent research has introduced modifications to these models which do not use analysts' consensus earnings forecasts as provided by databases such I/B/E/S, but for instance use a time series of earnings forecasts (Allee 2011), or forecast earnings using a cross-sectional model (Hou et al. 2012).

[16] In addition, the implied cost of capital approach is increasingly used in the asset pricing literature (e.g. Pástor et al. 2008; Hughes et al. 2009; Chava and Purnanandam 2010).

[17] The clean surplus relation states that every change in a firm's book value of equity that is not due to transactions between shareholders and the company (such as dividends or stock issues or repurchases) must be included in reported earnings (Claus and Thomas 2001).

Pt	=	Price per share at time t
Bt	=	Book value of equity per share at time t
r	=	Cost of equity
$FROE_{t+i}$	=	Forecasted return on equity (ROE) for the period t+i. For the first three years, this is computed as $FEPS_{t+i}/B_{t+i-1}$, where $FEPS_{t+i}$ is the mean earnings per share (EPS) forecast for year t+i and B_{t+i-1} is the book value per share for year t+i-1. Beyond the third year, FROE is forecasted using a linear interpolation to the industry median ROE
$Bt+i$	=	B_{t+i-1} + $FEPS_{t+i}$ - $FDPS_{t+i}$, where $FDPS_{t+i}$ is the dividend per share forecast for year t+1, estimated using the current dividend payout ratio (k). It is assumed that $FDPS_{t+i}$ = $FEPS_{t+i}$ * k

The terminal value is calculated as follows:

$$TV = \sum_{i=3}^{T-1} \frac{FROE_{t+i} - r}{(1+r)^i} * B_{t+i-1} + \frac{FROE_{t+T} - r}{r * (1+r)^{T-1}} * B_{t+T-1}$$

Gebhardt et al. (2001) make specific assumptions about forecast period and return on equity forecasts, the terminal value, and the dividend payout ratio. Earnings forecasts for 12 years in the future are made and a terminal value beyond the 12 years is estimated. For the first three years, they explicitly use analyst forecasts for earnings per share (EPS) and the dividend payout ratio (set as a constant fraction of forecasted earnings) to forecast future book values and ROE. For the following nine years, earnings are forecast implicitly by assuming that ROE reverts to the industry median ROE. Industry ROE is computed as the moving median of previous years' EPS from all firms in the same industry. The terminal value after year 12 is assumed to be the present value of residual income in year 12 in perpetuity.

The Abnormal Earnings Growth model by Ohlson and Juettner-Nauroth (2005)

The abnormal earnings growth (AEG) model by Ohlson and Juettner-Nauroth (2005) (OJN) uses next period earnings per share (EPS) and their growth as inputs to derive the present value of a stock.[18] The required rate of return is derived as a function of the forward-looking Earnings-to-Price ratio (E/P) and the expected short- and long term growth rate of earnings. The OJN model does not require the clean surplus assumption, nor data on book values and ROE, and uses earnings instead of dividends (Gode and Mohanram 2003). The AEG calculates the implied cost of equity capital as follows:

$$r_{OJN} = A + \sqrt{A^2 + \left(\frac{eps_{t+1}}{P_t}\right) * \left(\frac{eps_{t+2} - eps_{t+1}}{eps_{t+1}} - (\gamma - 1)\right)} \qquad (5.6.2)$$

Notation:

$A = \frac{1}{2}\left((\gamma - 1) + \frac{dps_{t+1}}{P_t}\right)$

[18] OJN (2005) note that their model may be seen as a generalisation of the Gordon Growth model (1997) as it offers an easing of the latter's more restrictive and special assumptions, that is earnings and dividends do not have to grow with the same rate as well as that this growth rate and the dividend payout ratio may vary independently.

r_{OJN}	=	Implied cost of equity capital
eps_{t+2}	=	two-year-ahead analysts' consensus earnings forecast for the firm
eps_{t+1}	=	one-year-ahead analysts' consensus earnings forecast for the firm
P_t	=	Current share price
dps_{t+1}	=	one-year-ahead analysts' dividend per share forecast for the firm
$\gamma - 1$	=	rate of infinite growth in abnormal earnings beyond the forecast horizon

The Price-Earnings Growth model by Easton (2004)

The Price-Earnings Growth (PEG) model by Easton (2004) is a special case of the abnormal earnings growth (AEG) model by Ohlson and Juettner-Nauroth (2005). A key component of the model is the role of short-term earnings forecasts for valuation, and it isolates the roles of (1) forecasts of next period's accounting earnings, (2) forecasts of accounting earnings two periods ahead, and (3) expected accounting earnings beyond the two-year forecast horizon (Easton 2004).

The model is based on earnings and earnings growth, and thereby expresses Price-Earnings-Growth (PEG) as a special case. The PEG ratio is the ratio of a stock's price to its earnings divided by its short-term earnings growth rate. The Easton (2004) model offers an amelioration of the PEG ratio in that it simultaneously estimates the expected rate of return and the long-term growth rate in abnormal earnings beyond the explicit forecast horizon. This method can then be used to estimate the expected rate of return. The expected rate of return is equal to the square root of the inverse of the PEG ratio multiplied by 100.

The model is derived from equation 5.6.2 above by making two more restricting assumptions: (1) no dividends are paid after year t ($dps_{t+1} = 0$), and (2) no growth in abnormal earnings after the explicit forecast horizon ($\gamma = 1$). The calculation of

the implied cost of equity capital using the Easton (2004) model is as follows:

$$r_{PEG} = \sqrt{\frac{eps_{t+2} - eps_{t+1}}{P_t}}$$

r_{PEG}	=	Implied cost of equity capital
eps_{t+2}	=	two-year-ahead analysts' consensus earnings forecast after annual report release date
eps_{t+1}	=	one-year-ahead analysts' consensus earnings forecast after annual report release date
P_t	=	Current share price

With regard to data requirements, the model is easy to implement. As the OJN (2005) model, the PEG model does not require the clean surplus assumption, nor data on book values, ROE, and dividends. It only requires stock price and analysts' consensus earnings forecasts of 1-year and 2-years ahead. Note, however, that the model requires increasing earnings forecasts, that is EPS1 < EPS2, otherwise the term under the square root cannot be solved (Easton 2004).

Decision on the method: The PEG model by Easton (2004)

Against the background that empirical studies (e.g., Daske 2006; Hail and Leuz 2006) report that the various methods produce fairly similar estimates and are highly correlated, the method selected for the study is the PEG model by Easton (2004). The reasoning behind the choice of this model is outlined in the following. First of all, the PEG model offers practical advantages compared to the other models, particularly the RIV. It has less demanding data requirements compared to other methods (see Botosan and Plumlee 2005; Francis, Khurana and Pereira 2005) and only requires price and earnings (forecasts of one and two years ahead), whereas other methods additionally require book value and dividend forecasts, or both. The fact

that important inputs to the RIV models' forecasts are not readily available and have to be assumed and inferred from other variables led Gode and Mohanran (2001, p. 2) to the conclusion that a "... valuation model that does not use book values as its underpinnings is thus more appealing". This conclusion is supported by Penman (2007) who calls for parsimonious equity valuation models that are comparatively easier to implement and require less information for their use. In addition, the PEG is easier to handle because its pricing equation can be solved for the rate of return via a closed form solution (Guay et al. 2005), whereas in the RIV based models the rate of return has to be obtained from numerical approximation (Botosan and Plumlee 2005). Second, the PEG model does not require the clean surplus condition which, in practice, may be violated on a per share basis as well as by many accounting rules (Daske 2006; Gode and Mohanran 2001). This criterion is important because Chen et al. (2004) showed that in European countries the RIV delivers inferior estimates to the PEG and the AEG because the clean surplus assumption is more frequently violated in European countries than in other jurisdictions. In addition, the authors showed that the PEG was slightly superior to the AEG. These findings are consistent with Lee et al. (2006) who conclude from a review of the literature that the PEG model is the most appropriate method for Europe. Third, research has demonstrated that the PEG model outperforms the other approaches (AEG, RIV) with regard to the association with risk proxies (Botosan and Plumlee 2005; Easton and Monahan 2005; Botosan et al. 2011). Botosan and Plumlee (2005) compared 5 methods[19] and show that the PEG outperforms the other methods because it is, unlike the others, associated with various risk proxies in a consistent and predictable way. A comparison of 12 models by Botosan et al. (2011) has come to similar conclusions. This criterion is crucial for the thesis, since its primary objective is the analysis of cross-sectional variation in the cost of capital associated with causal attributions. Cooper (2006) argued that for research that examines the association between disclosure and the cost of capital, the accuracy of absolute measures of the cost of capital is of less

[19]The Gebhardt et al. (2001), the Gordon Growth model Gordon and Gordon (1997), the Ohlson and Juettner-Nauroth (2005), the PEG ratio by Easton (2004) and the target price method (Botosan and Plumlee 2002).

importance; more important is that the method captures the relative differences in the estimates between firms. Further, Botosan and Plumlee (2005, p. 25) point out that research on the association between disclosure and the cost of capital is more about exploring a "directional hypothesis". Therefore, Botosan and Plumlee (2005) stress that an analysis of the cross-sectional variation in cost of capital requires a method that produces estimates which reliably capture this variation that is, which is consistently and predictably related to risk. Finally, the PEG model has been successfully used in previous research and has provided robust estimates of the implied cost of capital (e.g., Francis et al. 2004; Francis, Khurana and Pereira 2005; Hail and Leuz 2006; Christensen et al. 2007; Kim and Shi 2011). Moreover, the thesis' estimates may be compared to those by Lee et al. (2006) and Mangena et al. (2010) who also used the PEG model on UK data.

5.6.3.2 Validation of the measurement

The implied cost of equity capital measure is used as a proxy for the ex-ante unobservable cost of equity capital. In order to assess the validity of this measure, its behaviour and correlation with other well-known risk measures was tested. For that purpose, its association with the firm's beta, firm size, gearing, and the ratio of book-to-market value (B/M) was analysed. Prior research has reported that these factors influence the cost of equity capital (e.g. Botosan 1997; Gebhardt et al. 2001; Poshakwale and Courtis 2005; Francis, Khurana and Pereira 2005; Gietzmann and Ireland 2005; Francis et al. 2008). If the cost of equity capital measure in this study is valid, it should show a positive association with beta, gearing, and B/M, and a negative association with firm size. The regression model used to test the validity of the cost of capital estimates is as follows:

$$CostofCapital = \beta_0 + \beta_1 Beta + \beta_2 Size + \beta_3 Gear + \beta_4 B/M + \epsilon \quad (5.6.3)$$

All the variables included are already defined in the previous section 5.4 above.

The results are reported in Table 5.6.3. In the first four models, the individual variables are included, and in model 5 all variables are included. The results discussed are only those of the model including all variables (model 5).

Beta has the expected positive sign, but is insignificant. Although some previous studies (e.g. Botosan 1997; Hail 2002; Poshakwale and Courtis 2005) found a significant positive association, others also found, consistent with this study, a positive, but not significant relationship (e.g. Gietzmann and Ireland 2005; Berger et al. 2006; Espinosa and Trombetta 2007). Firm size (*MVE*) shows the expected negative association, indicating that larger firms have a lower cost of equity capital. This is consistent with the findings by prior research (e.g. Botosan 1997; Hail 2002; Poshakwale and Courtis 2005; Espinosa and Trombetta 2007). Gearing (*Gear*) is insignificant, but positive as expected. The difference with the significant positive results reported by previous research (e.g. Hail 2002; Gietzmann and Ireland 2005; Espinosa and Trombetta 2007) may stem from differences in measuring gearing. While this study measures gearing as long-term debt to long-term debt plus equity, those studies have tended to use debt-to-market value of equity to measure leverage. The book-to-market ratio (*B/M*), as expected, shows a positive relationship with the cost of equity capital, hence firms with a higher B/M ratio have a higher cost of equity capital, as had been reported by a number of previous studies (e.g. Gebhardt et al. 2001; Botosan and Plumlee 2005; Daske et al. 2006). Taken together, the results presented here suggest that the measure of cost of equity capital used in this thesis is a reasonably valid measure of a firm's cost of equity capital.

5.6.3.3 Data sources

The data required to calculate the implied cost of equity were obtained from Datastream (stock prices) and I/B/E/S (analysts' earnings forecasts). All required information had to be available for a firm to be included in the sample. The current earnings forecasts 6 months after the fiscal year end were collected for each firm. Stock prices were taken on the same day the forecast was issued. The implied cost of equity

Table 5.6.3: Validation of the cost of equity capital estimates

	Model 1			Model 2			Model 3			*Model 4*			Model 5		
	B	Beta	t-value	B	Beta	t-value	B	Beta	t-value	B	Beta	t-value	B	Beta	t-value
Constant	0.083		7.629***	0.138		14.766***	0.104		16.803***	0.086		19.021***	0.106		6.364***
Beta	0.015	0.111	1.406										0.017	0.129	1.645
Size				-0.007	-0.356	-4.558***							-0.006	-0.309	-3.512***
Gear							-0.015	-0.097	-1.164				0.008	0.064	0.774
B/M										0.026	0.254	3.143***	0.016	0.157	1.820*
Adj. R^2	0.07			12.1			0.02			5.8			13.6		
F-value	1.978			20.776			1.355			9.877			6.677		
Sign.	0.162			0.000			0.246			0.002			0.000		

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed); * Correlation significant at the 0.10 level (2-tailed); Adj. R2 = Explanatory power of the regression model for variance in *WCN*; F-value = Indicator for statistical significance of the regression model; Sign. = Significance level for the predictive ability of the regression model; B = Unstandardised regression coefficient; Beta = Standardised regression coefficient; t-value = t-statistics and significance level; Constant = Regression constant

Beta = Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market. *Size* = Firm size, measured as market value of equity at financial year end in £m. *Gear* = Gearing ratio, measured as long-term debt divided by long-term debt plus shareholders' equity at financial year end. *B/M* = Book-to-market ratio, measured as book value of equity divided by market value of equity.

capital was then estimated 6 months after the fiscal year end and the publication of the results. This ensures that the information is publicly available and contained in stock price (Hail and Leuz 2006).[20]

5.7 Data analysis

The chapter so far has laid out the methodology to conduct the thesis as well as the sources of the data used. This section discusses the data analysis process and the techniques used. Data analysis encompasses descriptive statistics followed by univariate and multivariate analysis.

5.7.1 Descriptive statistics

As a first step in the analysis, descriptive statistics for the dependent and independent variables provide a preliminary understanding of the data and its distribution. The statistics analysed include the maximum, minimum, mean, median, as well as measures of dispersion for (1) the disclosure measure, (2) the firm characteristics, (3) corporate governance characteristics, and (4) the cost of capital.

5.7.2 Univariate analysis

As the second step in the analysis process, univariate analysis examines the correlations between the dependent and the independent variables for each model separately (disclosure determinants and consequences). Since potential failures of the normality assumption in the data will have been assessed and remedied before the univariate analysis (for details see chapters 7 and 8), the thesis uses the parametric Pearson product moment correlation coefficient, a test that requires normal data and is more powerful than non-parametric tests (see Field 2009). The strength and direction of the correlation between the variables is given by the correlation coefficient r, which lies between -1 and +1, where a positive (negative) value signals a positive (negative)

[20]This 6 month period is the usual approach taken in the literature, see e.g. Gebhardt et al. (2001); Gode and Mohanram (2003); Lee et al. (2006).

association. The higher the value, the stronger the association (Kenny 1987; Bryman and Cramer 2009). The correlation coefficients and the signs of the associations provide a first insight into the direction and the magnitude of the associations between attribution disclosure and the explanatory variables. In addition, this allows a first assessment of potential multicollinearity problems within the variables (This issue will be discussed in more detail in the next section).

5.7.3 Multivariate analysis

As the third step in the analysis process, multivariate regression is used to test the hypotheses regarding (1) the determinants of attribution disclosure, and (2) the effect of attribution disclosure on the cost of capital. The two regression models specified in section 5.4 above are used to investigate these two issues.

The multivariate regression allows isolating the contribution of each independent variable to explaining variation in the dependent variable by holding the effect of the other variables constant (Gujarati 2003). Regression analysis is based on a set of assumptions which have to be tested before the analysis in order to ensure the validity of the results and the inferences drawn from the analysis (see e.g. Greene 1993; Tabachnick and Fidell 2007; Studenmund 2001; Gujarati 2003). These assumptions, along with the procedures the study used to ensure they are met, are presented in the following.

5.7.3.1 Normality

The normality assumption states that the data are normally distributed. If not, parametric tests (such as regression analysis) cannot be used (Pallant 2007). Therefore, it is important to check the data for any normality failures. Whether a distribution is normal can be assessed by analysing skewness and kurtosis of the data (see e.g. Greene 1993, Bryman and Cramer 2009): Skewness refers to the symmetry around the mean, with positive (negative) skewness meaning more observations lying left (right) of the mean and a longer tail of the distribution right (left) of the mean. Kurtosis refers to the peakedness of a distribution. Positive kurtosis means a piling

up of values around the mean, thus more peaked than a normal distribution, whereas negative kurtosis means a flatter distribution than the normal distribution. If a distribution is normal, the values for both skewness and kurtosis should be zero or close to zero (Field 2009; Bryman and Cramer 2009).

The thesis uses two ways to assess normality of the variables: Visual inspection of the shape of the data and formal numerical tests of normality. Visual inspection of the data is done by examining histograms (to assess inhowfar the distribution of the data follows a normal curve) and normal QQ-plots. [21]

A more objective numerical test of normality of the distribution is the Kolmogorov-Smirnov test. A significant result ($p < 0.05$) indicates that the distribution differs significantly from a normal distribution (Field 2009).

If the tests reveal that the distribution of the data is not normal, a common approach is to transform the data by performing a mathematical operation to achieve a distribution that resembles more a normal one, so parametric tests can be used (see e.g. Kenny 1987; Tabachnick and Fidell 2007). Another advantage of data transformations is that it reduces the influence of outliers and other failures to the assumptions (see Tabachnick and Fidell 2007). Which type of data transformation is appropriate to remedy normality deviations depends on the strength and direction of the normality violation.[22] The data transformations used in this study are natural log, winsorisation of the data, and the normal score transformation using the Van der Werden approach (See chapters 7 and 8 for details on the approach and the variables transformed).

5.7.3.2 Linearity

The linearity assumption states that there is a linear relationship between the variables, that is a straight line relationship. Linearity is assessed via residual plots which plot the regression residuals against predicted values, and non-linearity is present when

[21] In a normal QQ-plot, the observed values of a variable are plotted against expected values derived from a normal distribution which is shown as a straight line; if the distribution is normal, the observed values will fall along the line; if not, the values will spread around the line, above and below.

[22] See Tabachnick and Fidell 2007 and Pallant 2007 for a discussion and an overview of common data transformations.

the residuals do not follow a straight line but are for instance curved (Field 2009). Non-linearity reduces the power of the analysis, but can be corrected by transformation of the variables (Tabachnick and Fidell 2007; Stevens 2002). The plots are provided in the Appendix.

5.7.3.3 Homoscedasticity

Homoscedasticity assumes constant variance of the residuals (Studenmund 2001). Tabachnick and Fidell (2007) point out that this assumption is related to that of normality because if the distribution is normal, then homoscedasticity is met. Homoscedasticity is assessed via visual inspection of residual plots; failure of the assumption is present if the residuals are not randomly and evenly distributed around zero, but exhibit a funnel shape (see Field 2009). As with non-linearity, heteroscedasticity reduces the power of the analysis, but can be corrected by transformation of the variables (Tabachnick and Fidell 2007).

5.7.3.4 Independence of errors

Another assumption to be tested is that the regression residuals are independent from each other and there is no correlation. This is done via the Durbin-Watson test. A value of 2 indicates there is no correlation and Field (2009) suggests that values close to 2 are fine, whereas values <1 and >3 are problematic.

5.7.3.5 Additional tests

Multicollinearity

Another important issue to examine is multicollinearity. Multicollinearity exists when there is a strong correlation between independent variables (see Stevens 2002; Field 2009). This increases the standard errors of their regression coefficients, and reduces the precision of the estimates and may increase the probability of falsely rejecting a predictor variable (Gujarati 2003).[23]

[23]Furthermore, multicollinearity (1) makes it difficult to estimate the individual contribution of each variable separately, (2) limits R^2 because of overlapping variances of the variables, (3) increases the variances of the regression coefficients with the result that the predictor equations are unstable

The thesis uses two ways of testing for multicollinearity: First, prior to the regression analysis, the Pearson correlation coefficients between the independent variables are examined in a correlation matrix. The literature suggests that a value in excess of 0.8 to 0.9 is a cause for concern (Gujarati 2003; Haniffa and Cooke 2005). Second, as part of the ex post regression diagnostics, the Variance Inflation Factor (VIF) of the independent variables are analysed, which show whether there exists a strong linear relationship between a variable and the other variables. There is no set value for the VIF to indicate problems (Field 2009), but a widely accepted rule of thumb states that multicollinearity constitutes a problems if the value exceeds 10 (Stevens 2002; Gujarati 2003; Field 2009).

If multicollinearity is a problem, strategies for remedying include for instance: combining highly correlated variables or dropping one of them, principle components analysis to reveal the main factors underlying the predictors (Studenmund 2001; Stevens 2002), or run different specifications of the regression model, excluding one of the correlated variables at a time (e.g. Cooke 1989; Chavent et al. 2006).

Influential data points

As part of the post regression diagnostics of the model, it has to be assessed whether any observations have undue influence on the results, that is the capacity to influence or change the regression coefficients (see Field 2009; Tabachnick and Fidell 2007). The study uses Cook's distance which analyses how the overall model is influenced by one single observation; values above one are considered problematic (Cook and Weisberg 1982).

5.8 Summary

This chapter has presented the methodology for answering the research questions. First, the research philosophy and approach, along with the sample selection and data sources were discussed. Second, the data collection methods together with the development of the research instrument were laid out, as well as the data analysis

(Stevens 2002; Field 2009).

methods.

The study takes a quantitative approach to analyse (1) the determinants of attribution statement provision and (2) whether the provision of attribution statements influences the cost of capital. Regression analysis investigates the associations between the variables. Content analysis is used to identify attribution statements and the level of attribution disclosure is measured with a disclosure index based on the wordcount of attribution statements to capture the firms' emphasis on performance explanations. The cost of capital is measured using the PEG model that estimates an implied cost of capital. Various analytical techniques are then used to analyse the data and answer the research questions.

CHAPTER 6

DESCRIPTIVE ANALYSIS

6.1 Introduction

The previous chapter has described the methodology that is used to address the research questions of the thesis. This chapter describes the sample used in the analysis and provides descriptive statistics for the level of attribution disclosure and the cost of capital estimates.

The chapter is structured as follows: Section 6.2 describes the sample characteristics. In Section 6.3, the descriptive results for the cost of equity capital are exhibited. Section 6.4 presents the descriptive statistics for the attribution disclosure measure. Section 6.5 concludes the chapter with a summary.

6.2 Sample characteristics

In this section, the sample used in the thesis is described. As discussed in chapter 5, the description covers the firm characteristics beta (market risk), market capitalisation (firm size), gearing (financial risk), book-to-market value (growth potential), return on assets (firm profitability), analyst following (number of analysts following a firm), change in financial performance, and issue (firm issuing shares the following fiscal year or not). Also summarised are the corporate governance characteristics (proportion of

non-executive directors on the board of directors, executive director share ownership, audit committee size, and audit committee expertise). The statistics for these sample characteristics are presented in Table 6.2.1.

Panel A of Table 6.2.1 presents the firm characteristics of the sample companies. The sample of firms has an average Beta of 0.971 (median 0.970) and exhibits a minimum of 0.390 to a maximum of 1.790, suggesting the sample includes both low and high risk firms. The firm size measure (*MVE*) indicates a large variation in size within the sample. The average market value (*MVE*) is £1955.944m with a much lower median of £402.400m. The lower median, together with a minimum (maximum) market value of £13.170m (£26323.570m) and a lower (upper) quartile of £123.400m (£1419.730m) indicates the presence of many smaller to medium-sized firms in the sample. Gearing (*Gear*) is 40.4% on average (median 41.5%) with a lower (upper) quartile of 19.7% (55.0%). The wide range of gearing observed, with a low of 0% to a high of 146% suggests that the sample contains a broad variety of firms ranging from firms with no gearing to very highly geared firms. The lower gearing is consistent with the notion that UK firms use more equity finance than debt (see Mangena et al. 2010). The book-to-market ratio (*B/M*) of the sample firms has a mean of 0.444 (median 0.370) with a minimum of 0.010 to a maximum of 2. Looking at the mean value of 0.444 indicates that the capital market on average assesses good future prospects for the sample firms, as having a low B/M ratio (low book value of equity relative to market value) suggests higher valuation and better earnings prospects (see Fama and French 1992). For profitability (*Profit*), the average return on assets (*ROA*) in the sample is 5.9% (median 5.7%) and a lower (upper) quartile of 3.3% (8.6%). The range of values is large, from a minimum of -25% to a maximum of 24%, and suggests that the sample contains a number of highly profitable firms as well as a number of firms with negative returns (14 firms with negative return on assets). For performance change (*Perf*), slightly more sample firms reported worse performance than the previous year (measured as change in return on assets, ROA), with 56% reporting a decline in ROA from the previous fiscal year, and 44% reporting an increase. On average, the sample firms are followed by approximately 8 analysts

Table 6.2.1: Descriptive statistics for the independent variables

	Mean	Std. Dev.	Median	25%	75%	Min	Max
Panel A: Firm characteristics							
Beta	0.971	0.252	0.970	0.790	1.120	0.390	1.790
Size (MVE)	1955.944	4165.979	402.400	123.400	1419.730	13.170	26323.570
Gear	0.404	0.255	0.415	0.197	0.550	0.000	1.460
B/M	0.444	0.325	0.370	0.237	0.532	0.010	2.000
Profit (ROA)	0.059	0.059	0.057	0.033	0.086	-0.250	0.240
Perfchange	0.563	0.497	1.000	0.000	1.000	0.000	1.000
AF	7.590	6.212	5.000	3.000	12.000	0.000	26.000
Issue	0.200	0.400	0.000	0.000	0.000	0.000	1.000
Panel B: Corporate governance characteristics							
PropNED	0.511	0.126	0.500	0.430	0.570	0.250	0.870
Dirown	0.056	10.748	0.009	0.002	0.049	0.000	0.567
ACSize	3.295	0.913	3.000	3.000	4.000	2.000	6.000
ACExp	0.475	0.246	0.500	3.300	6.700	0.000	1.000

Variable definitions

Beta = Firm beta. *Size* = Market value of equity at financial year end in £m. *Gear* = Gearing ratio, measured as long-term debt to long-term debt plus equity. *B/M* = Book-to-market ratio, measured as the ratio of book value of equity to the market value of equity. *Profit (ROA)* = Firm profitability, measured as return on assets. *Perfchange* = Dummy variable, taking the value of 1 if the firm's performance has deteriorated from the previous financial year, measured as the percentage change in return on assets from the previous year; 0 otherwise. *AF* = Number of analysts following a firm. *Issue* = Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise. *PropNED* = Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board. *Dirown* = Executive director share ownership, measured as the percentage of firm shares held by executive directors. *ACSize* = Audit committee size, measured as the number of directors on the audit committee. *ACExp* = Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee.

(median 5). At the lower (upper) quartile, firms are followed by 3 (12) analysts, with a minimum of 0 and a maximum of 26. Share issues in the fiscal year following the year under review (*Issue*) were carried out by 28 sample firms (20%).

Panel B of Table 6.2.1 presents the descriptive statistics for corporate governance structures for the sample firms. On average 51% of the members are non-executive directors (*PropNED*), with the proportion ranging from 25% to 87%. The UK Corporate Governance Code (FRC 2010b) recommends that the board should have a balanced combination of executive and non-executive directors to avoid one group dominating the other. Hence, a distribution of 51% (49%) non-executive (executive) directors suggests that the sample firms' practice is consistent with this recommendation of achieving a balanced representation. Executive Directors' holdings in their firm's shares (*Dirown*) is on average 5.6%. The median, however, is only 0.9% and the values for the lower and upper quartile are 0.2% and 4.9%. This indicates that the sample contains a number of firms with low director shareholdings. The average size of the audit committee (*ACSize*) of the sample firms is about 3 directors (median of 3) with a minimum of 2 and a maximum of 6 members. As the recommendations by the Blue Ribbon Committee (1999), the Smith Committee (2003), and the UK Corporate Governance Code (FRC 2010b) advocate a minimum of three members, this suggests that the majority of sample firms complies, but some firms do not.[1] The proportion of the audit committee members that possess experience or a qualification in financial management or audit (*ACExp*) as advocated by the Smith Committee (2003) and the Blue Ribbon Committee (1999) is on average 47.5%. There are, however, firms that do not have a designated expert on the audit committee. Given that the UK Corporate Governance Code (FRC 2010b) recommends that UK firms' audit committees have a minimum of at least one member with relevant qualifications or experience, this suggests that, although the majority of firms follows

[1]Inspection of the annual reports found that these firms were smaller firms with corresponding smaller board of directors and only 2 non-executive directors (NEDs), and the audit committee was composed of both these directors. These smaller firms having 2 NEDs is in line with the recommendations of the UK Corporate Governance Code (FRC 2010b). Thus these firms are in compliance with the recommendations of having audit committees composed of NEDs only. Also, 2 firms stated that one of the three audit committee members left during the year and they were looking for a replacement.

this recommendation, there are still firms that do not follow the recommendations.[2]

6.3 Descriptive analysis for the cost of equity capital

Table 6.3.1 presents the cost of equity capital estimated for the sample firms. Panel A exhibits the average cost of equity capital of the sample firms, and Panel B provides the distribution of the cost of equity capital estimates.

Table 6.3.1: Descriptive statistics for the cost of equity capital

	N	Mean	Std. Dev.	Median	25%	75%	Min	Max
Panel A: Average cost of equity capital								
CoC - Full sample	142	0.0976	0.0406	0.0925	0.0758	0.1079	0.0110	0.2860
CoC - Reduced sample	136	0.1010	0.0380	0.0940	0.0781	0.1101	0.0410	0.2860

Panel B: Distribution of cost of equity capital				
	Full sample		Reduced sample	
	No	%	No	%
< 5%	8	5.6%	2	1.5%
5% to < 10%	87	61.3%	87	64.0%
10% to < 15%	35	24.6%	35	25.7%
15% to < 20%	8	5.6%	8	5.9%
20% to < 25%	3	2.1%	3	2.2%
≥25%	1	0.7%	1	0.7%
Total	142	100%	136	100%

As can be seen from Panel A, the mean cost of equity capital for the full sample of firms is 9.76% (median 9.25%), with a lower (upper) quartile of 7.58% (10.79%). The mean value is comparable in magnitude to the values reported by other recent studies using the Easton PEG model and UK data to estimate the cost of capital. For example, Lee et al. (2006) reported 10.48% whilst Mangena et al. (2010) reported 10.29%. In order to understand the distribution of the cost of equity capital, the estimates were classified into six groups. Table 6.3.1 Panel B reports on the classifi-

[2]The reason for non-compliance provided in the annual reports was that the firms judged the audit committee members to have the required expertise and experience to effectively carry out their task despite the lack of a formal qualification that fulfils these requirements.

cation. For the full sample of firms, it can be seen that the majority of firms has a cost of equity capital between 5% and less than 15% (85.9% of firms in total), with more than half of the sample firms having a cost of equity capital between 5% and less than 10% (61.3% of firms). For the rest of the sample firms, 5.6% have a cost of equity capital of below 5%, 5.6% of firms have a cost of equity capital between 15% and less than 20%, and a total of 2.8% of firms has a cost of equity capital of 20% or higher.

In the full sample, the minimum estimate for the cost of equity capital of 1.1% is very low and suggests the presence of one or more outlying values[3] as the yield on British 10-year government bonds, as a proxy for the risk-free rate, was within the range of 4.1% to 4.73% during the year 2006 (Bank of England 2010). Close inspection of the data revealed that 6 observations had cost of equity capital estimates of 4% or less.

In order to gauge the influence of these 6 observations on the sample distribution, all firms with cost of equity capital estimates of below 4.1% were removed, leading to a reduced sample of 136 firms. Table 6.3.1 Panel A shows that the mean cost of equity capital for the reduced sample of firms increases to 10.10% (median 9.40%), with the lower (upper) quartile increasing slightly to 7.81% (11.01%). This mean value for the reduced sample is a bit closer to the values reported by other recent studies using the Easton PEG model and UK data to estimate the cost of capital than the value for the full sample, for example the 10.48% reported by Lee et al. (2006), or the 10.29% reported by Mangena et al. (2010). For the reduced sample, Table 6.3.1 Panel B shows an increase in the percentage of firms that has a cost of equity capital between 5% and less than 15% to 89.7% of firms, and for those firms having a cost of equity capital between 5% and less than 10% (64.0% of firms). For the rest of the sample firms, 1.5% have a cost of equity capital of below 5%, 5.9% of firms have a cost of equity capital between 15% and less than 20%, and a total of 2.9% of firms has a cost of equity capital of 20% or higher.

In Table 6.3.2, the cost of equity capital estimates of the full sample by industry

[3]Outliers are observations with extreme values that may unduly influence the analysis; for a discussion of the influence of outliers see eg. Stevens (2002) or Bryman and Cramer (2009).

are reported. This helps to compare firms' cost of equity capital across industries. As previous studies have shown, the cost of equity capital differs across industries (e.g. Gebhardt et al. 2001; Daske et al. 2006). The industries are presented in descending order of the cost of equity capital.

Table 6.3.2: Cost of equity capital by industry

	N	Mean	Std. Dev.	Median	25%	75%	Min	Max
Cost of equity capital by industry								
IT	12	0.120	0.050	0.099	0.087	0.146	0.079	0.246
Aerospace and Defense	5	0.107	0.030	0.092	0.088	0.133	0.084	0.157
Chemicals	6	0.106	0.024	0.117	0.079	0.121	0.069	0.130
Electronic and Electrical Equipment	6	0.106	0.025	0.098	0.083	0.136	0.081	0.140
Retailers	17	0.101	0.046	0.091	0.069	0.128	0.021	0.210
Utilities	5	0.100	0.048	0.095	0.067	0.136	0.041	0.176
Business Support Services	23	0.099	0.023	0.098	0.083	0.112	0.059	0.160
Household Goods	5	0.089	0.021	0.099	0.067	0.105	0.062	0.111
Construction and Construction Materials	5	0.084	0.018	0.084	0.066	0.102	0.060	0.106
Engineering	6	0.082	0.011	0.079	0.072	0.095	0.071	0.097
Media	12	0.079	0.017	0.080	0.065	0.094	0.049	0.105
Food and Beverages	6	0.078	0.013	0.077	0.071	0.084	0.062	0.102
Travel and Leisure	12	0.074	0.032	0.078	0.059	0.083	0.014	0.139
Oil and Gas	6	0.069	0.049	0.071	0.017	0.113	0.011	0.133
Other*	16	0.128	0.061	0.114	0.084	0.150	0.032	0.286

*Other subsumes industries with less than 5 observations and includes Consumer Goods, General Industrials, Healthcare Equipment and Services, Mining and Basic Resources, Pharmaceuticals and Biotechnology, Telecommunication, Transportation.

As can be seen from Table 6.3.2, the industries with the highest mean cost of equity capital are IT (12%), Aerospace and Defense (10.7%), Chemicals (10.6%) and Electronic and Electrical Equipment (10.6%).

IT has the highest average cost of equity capital in the sample. Lee et al. (2006) attribute this to the fact that IT is an industry with high growth, short product life-cycles, and intense competition. The Aerospace and Defense industry is characterised by long product cycles, large capital commitments, exposure to the overall economic conditions, and often depends on large bulk orders or government spending (see

Bollinger et al. 2009). Against that backdrop it can be argued that Aerospace and Defense represents an industry with a high risk attached to whether the projected returns on capital materialise as planned. Hence investors would require a higher equity risk premium. Likewise, the Chemicals industry is capital intensive and considered risky (Cassidy et al. 2011) so that investors may require a higher risk premium for investing in firms in this sector.

The industries with the lowest mean cost of equity capital are Oil & Gas (6.9%), followed by Travel & Leisure (7.4%), Food and Beverages (7.8%), and Media (7.9%). The lowest value of a firm's cost of equity capital throughout the sample comes from Oil & Gas (1.1%), followed by Travel and Leisure (1.4%) and Retailers (2.1%). The Food & Beverages industry has low capital intensity (GlobalEdge 2011) and they supply products every individual needs on a regular basis. Hence there is a stable and persistent demand, and it is difficult to reduce consumption of the industry's products (apart from switching to lower priced food products), so firms are relatively shielded form cyclical swings of the economy. This suggests that investors consider this industry to be a fairly low risk industry, and would accordingly require a lower rate of return. Media firms on average have a low cost of equity capital. The sample contains a number of business-to-business media services, television companies, and companies providing specialist publications. These firms cater to specific market needs, hence they will face a more stable demand for their services, which might explain a potentially lower risk premium. In addition, and more general, media consumption across the different media channels in the industry taken together is relatively stable or even increasing as there is always demand by users for consumption of these products (see KPMG 2011). This might also explain a lower cost of equity capital. That Travel & Leisure firms have a low cost of equity capital on average might be due to the composition of the industry. While some firms' business in the industry is to a certain extent cyclical and exposed to the overall economic conditions the industry, hence the sample, also encompasses a wide range of businesses from casino and betting, to service businesses to the industry, to operators of public transport. It can be argued that these businesses are more shielded from swings in economic conditions and pro-

vide services for which demand is more stable and predictable. This might reduce the risk premium attached to the industry and explain the findings of a low average cost of equity capital. That Oil & Gas has the lowest average cost of equity capital is inconsistent with arguments that there is considerable risk attached to firms that are involved in exploration of resources and their exploitation. Oil & Gas firms face the risk of not finding adequate resources to replace current resources or increase them, which then reduces their future prospects. The findings presented here, however, suggest that ultimately Oil & Gas firms may not be as risky as commonly perceived.

A comparison of these results to those reported by other studies (e.g. Lee et al. 2006; Mangena et al. 2010) shows that they are broadly consistent. The findings are consistent with Lee et al. (2006) for IT and Electronic and Electrical Equipment for the highest cost of equity capital, and for Media and Food & Beverage for the lowest cost of equity capital. There are, however, some differences as well. While this thesis finds that Aerospace & Defense and Chemicals are among the industries with the highest cost of equity capital, Lee et al. (2006) find these industries to be below average. Moreover, the results for Oil & Gas are inconsistent, being at the opposite range of the results in the two studies.

Regarding Mangena et al. (2010), the findings are consistent for Aerospace & Defense and IT (high cost of equity capital), Food & Beverages and Engineering (low cost of equity capital), as well as Business Services (average cost of equity capital). However, they are different for Electronic and Electrical Equipment for which Mangena et al. (2010) report a below average value in their sample, hence the opposite of this study's findings. Similarly, Media here has a below average cost of equity capital, whereas Mangena et al. (2010) report an above average value. Moreover, while this study finds Chemicals to be one of the industries with the highest cost of equity capital, Mangena et al. (2010) find the opposite.

The differences with the studies by Lee et al. (2006) and Mangena et al. (2010) may be due to two reasons. First, the results by Lee et al. (2006) are based on a time-series average of an 11-year period (1995-2005), whereas this thesis is based on a cross-sectional analysis of firms with a fiscal year-end in 2006. Second, industry

definitions differ between the studies. For instance, while Lee et al. (2006) use 29 industries, this study uses 21 industries based a review of industry classifications in the relevant literature.[4]

Regarding Mangena et al. (2010), their study uses 14 industries compared to the 21 industries used here. More importantly, the industries analysed differ. For instance, this thesis analyses Travel & Leisure and Oil & Gas, which are found to be among the industries with the lowest values, but they have no equivalent in the Mangena et al. (2010) study. In turn, their study analyses Banks & Insurance and Real Estate, two industries excluded from analysis in this investigation. Against that backdrop, it may be difficult to directly compare the findings of this thesis with their results.

6.4 Descriptive statistics for the attribution disclosure measure

This section presents the descriptive statistics of the attribution disclosure measure of the sample firms. The statistics are presented in two categories. The first category is the aggregate disclosure measure. The second category is the statistics of the disclosure measure by industry.

6.4.1 Analysis of the aggregate disclosure measure

Table 6.4.1 shows the descriptive statistics for the aggregate disclosure measure.

[4]For instance, Industry-Classification-Benchmark (2010); Campbell (1996); Fama and French (1997); Botosan and Plumlee (2002); Lee et al. (2006); Daske et al. (2006); Daske et al. (2009); Mangena et al. (2010).

Table 6.4.1: Descriptive statistics for the attribution disclosure measure

	N*	Mean	StdDV	Median	25%	75%	Min	Max
WCN	142	0.052	0.034	0.045	0.027	0.068	0.003	0.237
WCN_INT	140	0.037	0.026	0.030	0.020	0.047	0.001	0.125
WCN_EXT[1]	113	0.019	0.020	0.013	0.007	0.025	0.0003	0.149

*N varies as not every firm provided both internal and external attributions.

[1] *WCN* = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. *WCN_INT* = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative sections of the annual report. *WCN_EXT* = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative sections of the annual report.

The first measure of attributions is the aggregate wordcount for causal attributions as percentage of total words in the narrative sections (*WCN*). As can be seen from the table, *WCN* ranges from a minimum of 0.003 to a maximum of 0.237 with a mean value of 0.052 (median 0.045).

These results show that the percentage of words used for attributions to the total number of words in the narrative sections of the annual report is generally low. This indicates that firms do not accord much space in their discussions of the financial year to explaining performance outcomes. Moreover, all three wordcount measures have a very low standard deviation (3.4%, 2.6%, and 2% respectively), which indicates that the percentage of space devoted to explaining the results is fairly stable across firms and does not vary much. This finding is consistent with Luz et al. (2009) who, albeit measuring attribution provision as sentences that contain attributions to the total number of sentences in the annual report, also reported a low percentage. In terms of categories, internal attributions (*WCN_INT*) has a mean of 0.037 (median 0.030), with a minimum of 0.001 and a maximum of 0.125. As for external attributions (*WCN_EXT*), the scores range from a minimum of 0.0003 to a maximum of 0.149. The mean *WCN_EXT* value is 0.019 (median 0.013) which is lower than the internal attribution scores. This suggests the tendency of the sample firms to attribute outcomes more to internal than to external causes, perhaps as an attempt by managers to show their ability to run the business successfully. Such

attempts are widespread in annual reports. For example, in an attempt to show that their growth strategy of acquisitions is improving firm performance, one report provides that "*the operating margin increased to 14.8% (2005: 13.1%), as savings from the integration of the acquisitions made over the last three years are realised*" (Johnson Services Group 2006, p. 6). Another example for highlighting the success and appropriateness of a firm's strategy as the basis for good performance is to stress that "*this performance reflected a key feature of Telecoms' success, namely the good returns earned from the continuing high level of investment in new product development designed to satisfy demanding requirements of the leading players in the market*" (Anite 2006, p. 8). Companies also emphasise how the competence and capabilities of management led to a successful outcome, as the annual report of Filtrona (2006, p. 4) exhibits: "*The Company achieved an 81% improvement in net cash inflow before financing activities, increasing from £15.8m in 2005 to £28.6m. This was largely achieved by operational management focusing on stronger working capital control.*"

These examples suggest that firms may want to emphasise their own role in delivering performance, and provides support for the argument by Salancik and Meindl (1984) that firms would claim responsibility for performance outcomes in order to demonstrate that they are in control of the situation. Against the backdrop of the suggestion by Salancik and Meindl (1984) that management uses attributions to demonstrate to their stakeholders that management is in control of the firm's course in an attempt to both reassure and foster existing investors' confidence as well as to attract potential investors to the firm, it can be argued that attributing performance outcomes to internal causes rather than to external causes may constitute an attempt to convince investors that management masters the situation and the firm is well positioned for success. This may help the firm obtain capital on better terms as investors may feel reassured that managers are in control. It may also be beneficial for managers' job security (Clatworthy and Jones 2003; Baginski et al. 2004).

Nevertheless, there is also a tendency to attribute bad performance to external causes. For example, "*lower consumer spending in the stationery market has soft-*

ened stationery sales" (WH Smith 2006, p. 9). This implies that poor performance is not due to management failures, but to causes outside management's control. Similarly, an explanation such as "*profits per unit in the existing business were down year on year mainly due to the weakness in the new car market*" (Pendragon 2006, p. 6) suggests that management is not directly responsible for the outcome, but the overall market conditions are the reason. This implies that management cannot be blamed for the outcome, so these explanations may be an attempt at managing the impressions of shareholders (see Staw et al. 1983; Merkl-Davies et al. 2007). Blaming negative outcomes on external factors that management cannot control constitute defensive actions. Denying responsibility for an outcome by blaming external factors that cannot be controlled may make seem management less responsible for the negative performance (Aerts 2005). Thus management may try to convince investors that, despite their best efforts, external factors caused the weak performance, in an attempt to reduce investors' negative impressions of the company and build confidence in management.

The tendency by firms to elaborate more on performance outcomes to internal than to external causes reported in Table 6.4.1 is consistent with the tendency found by Aerts (1994) and Aerts (2005). Aerts (1994) found that for both positive and negative performance outcomes, firms attribute more to internal than to external causes, in particular, in case of positive outcomes. Aerts (2005) provided evidence that, for the total number of attributions, firms tend to attribute performance outcomes to internal rather than to external causes.

As prior research reported that firms tend to exhibit self-serving attribution behaviour by attributing success to internal factors but negative outcomes to external factors (e.g. Bettman and Weitz 1983; Aerts 1994; Baginski et al. 2000; Aerts 2005; and see also chapter 2), Table 6.4.2 presents the distribution of internal and external attribution statements separately for firms with an increase in financial performance from the prior fiscal year and for those with a decrease in financial performance.

Table 6.4.2: Distribution of internal and external attributions for financial performance change

	Mean	StdDV	Median	25%	75%	Min	Max
Positive performance change							
N: 62 firms							
No of attribution statements							
Internal	5.650	3.535	5.000	3.000	7.250	0.000	19.000
External	1.94	1.424	2.000	1.000	3.000	0.000	5.000
WCN[1]							
WCN_INT	0.036	0.027	0.030	0.017	0.048	0.000	0.118
WCN_EXT	0.012	0.014	0.008	0.001	0.015	0.000	0.072
Negative performance change							
N: 80 firms							
No of attribution statements							
Internal	5.940	4.393	5.000	3.000	7.000	1.000	22.000
External	2.820	2.886	2.000	1.000	4.000	0.000	15.000
WCN							
WCN_INT	0.037	0.026	0.030	0.022	0.043	0.003	0.125
WCN_EXT	0.018	0.022	0.011	0.002	0.024	0.000	0.148

[1] *WCN* = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. *WCN_INT* = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative sections of the annual report. *WCN_EXT* = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative sections of the annual report.

It can be seen from the table that unlike previous research, the results do not show major differences between firms with increasing performance and those with decreasing performance. Both performance groups show a strong tendency to attribute positive as well as negative performance changes to reasons internal to the firm. This is found for the attribution disclosure measures (*WCN_INT/EXT*) and for the number of attribution statements that are given to internal and to external causes respectively.

Taking responsibility for a good outcome may be an attempt at stressing the strengths of the company and to convince investors that the firm is a good investment and has good prospects. For example, an explanation that increasing performance "*reflected the strong underlying demand for ESAB products and ongoing operational efficiency gains, including recent capacity additions in lower cost locations around the world*" (Charter 2006, p. 10) clearly points to the strong positioning of the firm in

its market and further potential for improvements. Stressing internal factors as cause for good performance puts a good light on management and the firm's capabilities. Moreover, an explanation that increased profit "*reflects improvements in cigarette market share and the benefits of price increases*" (Imperial Tobacco Group 2006, p. 19) could show investors that the company has pricing power in the market, pointing to a strong position and potential for stable returns.

In case of decreasing performance, pointing to internal factors may also be beneficial. As Salancik and Meindl (1984) point out, this may be used to signal to investors that the firm is aware of the problem and working on solving it. For example, by acknowledging that *"the major cause behind the fall in these profits was the inability of our Hospitality Division to secure new revenues from a difficult marketplace*" (Alphameric 2006, p. 8). This acknowledgement was followed in the annual report by a description how the firm has already taken action to cut costs and restructure the division to prevent similar outcomes in the future (Alphameric 2006, p. 8). This corresponds to the suggestion by Salancik and Meindl (1984) that, in order to demonstrate to investors that management is in control of the situation, they may also take responsibility for negative outcomes, not only good results. Blaming external factors may be perceived as management not being in control of matters, which may actually decrease investor confidence in the firm and have negative effects for share price. Moreover, internal reasons cited for a downturn in performance may be that the firm had taken active steps to position the firm successfully for the future. This includes investments in the business and products to generate good future returns, so that a drop in profit was "*impacted by investment in ebooks and developing export markets*" (Dawson Holdings 2006). Although these measures taken by the firm had a negative effect on performance in the period just passed, they may offer future benefit for shareholders. This is an example in which a firm may point to internal reasons to explain decreased performance in order to highlight to investors that management is actively shaping and improving the firm's medium- to long-term prospects, even if these measures may have a negative short-term effect.

Regarding attributions to negative performance outcomes, the finding that firms

do not attribute negative performance chiefly to external factors is consistent with results by Aerts (1994) and Aerts (2005) who finds a rather balanced distribution between internal and external attributions. Similar to Aerts (1994) and Aerts (2005), the findings of this thesis suggest that UK companies might not exhibit the same self-serving attribution behaviour as US firms.

In order to gain an understanding of the distribution of the disclosure measure, the achieved disclosure scores are separated into 4 groups. Table 6.4.3 presents the results.

Table 6.4.3: Distribution of *WCN*

Distribution *WCN* scores		
	No.	%
< 0.0594	101	71.1
0.0594 to < 0.1188	33	23.2
0.1188 to < 0.1782	7	4.9
0.1782 to 0.2376	1	0.7
Total	142	100

WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report.

It can be seen from the table that 101 sample firms (71.1%) have an attribution disclosure score lower than 0.0594, which constitutes the majority of firms. An attribution disclosure score between 0.0594 and less than 0.1188 is found for 33 firms. Taking these two groups together, this means that 134 sample firms (94.3%) have an attribution disclosure score of less than half of the maximum score achieved by a sample firm. This further suggests that the extent to which sample firms provided explanations for performance outcomes is generally very low. For the rest of the sample firms, 7 firms (4.9%) have a disclosure score between 0.1188 and lower than 0.1782. One sample firm has a disclosure score higher than 0.1782, which is the firm that achieved the maximum score found in the sample of 0.2376.

6.4.2 Attribution statement analysis by industry

Prior research has provided evidence that firms' attribution behaviour differs among industries (e.g. Bettman and Weitz 1983; Aerts 2005; Aerts and Tarca 2010). This study therefore analyses the attribution disclosure measures on an industry basis. Table 6.4.4 and Table 6.4.5 present the statistics for *WCN* and for *WCN_INT* / *WCN_EXT* separately.

Table 6.4.4: Analysis of *WCN* by industry

	N	Mean	StdDV	Median	25%	75%	Min	Max
Chemicals	6	0.067	0.040	0.051	0.040	0.107	0.027	0.133
IT	12	0.059	0.034	0.052	0.033	0.080	0.004	0.123
Retailers	17	0.051	0.029	0.045	0.026	0.060	0.020	0.120
Construction & Construction Materials	5	0.051	0.027	0.043	0.027	0.080	0.023	0.089
Travel and Leisure	12	0.048	0.022	0.043	0.031	0.064	0.022	0.098
Business Support Services	23	0.048	0.037	0.036	0.019	0.052	0.003	0.129
Engineering	6	0.047	0.032	0.043	0.015	0.076	0.015	0.094
Electronic and Electrical Equipment	6	0.045	0.034	0.037	0.022	0.065	0.014	0.109
Food and Beverages	6	0.042	0.020	0.043	0.023	0.059	0.022	0.068
Aerospace and Defense	5	0.040	0.023	0.041	0.020	0.060	0.011	0.071
Oil and Gas	6	0.040	0.015	0.036	0.032	0.048	0.023	0.068
Utilities	5	0.040	0.037	0.021	0.011	0.078	0.006	0.093
Household Goods	5	0.039	0.009	0.045	0.030	0.047	0.027	0.048
Media	12	0.035	0.023	0.029	0.014	0.056	0.005	0.075
Other*	16	0.087	0.046	0.078	0.059	0.099	0.046	0.237

*Other subsumes industries with less than 5 observations and includes Consumer Goods, General Industrials, Healthcare Equipment and Services, Mining and Basic Resources, Pharmaceuticals and Biotechnology, Telecommunication, Transportation.

Table 6.4.4 shows that the industry with the highest average percentage of words used for performance explanations in the narrative review sections (*WCN*) is Chemicals (6.7%), followed by IT (5.9%), Retailers (5.1%) and Construction and Construction Materials (5.1%). This suggests that firms in these industries provide the most extensive explanations in terms of space they occupy in the narrative sections of the annual report. For chemical companies, the reason for providing these extensive explanations might be that the industry could be considered as rather risky, as was reflected in the higher industry cost of equity that was found in section 6.3, and firms therefore

provide more performance explanations to counter this perception. The chemicals industry can be considered a more risky and changing industry, characterised by margin pressure, competition, and changing demand and industry structures (Cassidy et al. 2011). Hence to counter perceptions of risk and to ultimately alleviate investor concerns about investing in such an industry, chemical companies may need to explain their performance outcomes more in depth and extensive than other industries to allow a thorough understanding of the reasons for performance and the firm's future prospects. This may help the firms attract capital and financing at better terms. Regarding IT, it might be that the fast-paced nature of the industry with constant technological changes and at times short product cycles requires firms to extensively discuss their performance outcomes to give investors clear guidance as to which products and segments contribute to good or bad performance. For example, firms in the industry may want to explain where the contribution to revenues and profits comes from, for instance whether the majority of revenues and profits comes from mature or soon-to-be obsolete products, or from new products in a new market segment with high growth potential. An example for such a fast changing environment can be found in the annual report of Pace Microtechnology (2006, p. 14). The company reported a loss for the year and explained that "*delays in the development of the HD PVR for US cable mean that the design uses components many of which were ordered, and prices fixed, over a year ago. Newer and less expensive components are now available to use on new designs. The delay also affects the anticipated product life of the existing design*". This may prompt the firm to be more forthcoming. Retailers also provide extensive performance attributions. Retailers are very much exposed to the state of the overall economy and therefore tend to be seen as indicator of the direction of the economy, hence their performance is closely followed by analysts, investors, and business in general (United States Census Bureau 2012). This suggests an increased interest by investors in the reasons behind retailers' performance so as to gain more insight into the development of the overall economy to assist in asset allocation. This might lead companies in the retail industry to provide more extensive performance explanations to respond to these expectations.

The lowest word count is found in Media (3.5%) and Household Goods (3.9%), followed by Utilities, Oil and Gas, and Aerospace and Defense (all 4.0%). Household Goods is considered a mature sector with fairly stable sales and earnings, and low vulnerability to swings in the economy (Seidman 2012). This suggests that performance of firms in this industry might be more predictable, with deviations from expectations less significant and fewer big surprises at earnings announcements than in other industries. For this reason, it is possible that demand for firm-provided performance explanations is lower, and Household Goods firms disclose less. For the Media industry, competitive pressures might lead firms to provide less extensive performance explanations. The industry is going through a period of significant change regarding issues such as business models, technology, revenue creation (Deloitte 2012; Ernst & Young 2012). These pressures might make firms more protective of their businesses and, as a consequence, they might be reluctant to be too forthcoming about the reasons for their performance. As for Utilities, it is a regulated industry, so that firms in this sector face higher information demands by regulatory bodies that are charged with monitoring their actions and performance, which will lead to more information being disclosed to satisfy these demands (Clapham and Schwenk 1991). Firms therefore may have to provide more information of all types to satisfy the demand by regulators and the public, so that the information about the firm's operations provided in the narrative sections becomes more voluminous than for firms in not regulated industries. Following from that, the overall percentage of word count used for explaining performance outcomes reduces. For Oil & Gas, Meek et al. (1995) found that firms in the oil industry provided higher non-financial disclosure and suggested that these firms might be more sensitive to social accountability and therefore disclose more. It can be argued that these firms operate in more environmentally sensitive industries and will be under higher public scrutiny to ensure no environmental damage is done. Hence it is possible that these have to devote a substantial part of their narrative sections to explaining their operations, environmental policies and the impact of the business, in order to reassure the stakeholders that the company is conducting a responsible and sustainable business. Providing more of this type of information in the

narrative sections of the annual report might therefore reduce the space available for explaining performance outcomes.

Table 6.4.5 presents the descriptive statistics for the distribution of the amount of space in the narrative sections given to internal versus external explanations (*WCN_INT* and *WCN_EXT*) by industry.

As can be seen from the table, in all industries, there is a clear tendency for a higher word count for internal explanations than for external explanations relative to the total word count in the narrative review sections. This means firms in all the industries tend to elaborate more on internal causes than on external causes for performance. Comparing these results with those reported by prior research that looked at the quantity of attribution statements (e.g. Bettman and Weitz 1983; Aerts 2005; Aerts and Tarca 2010) reveals that, while in this thesis firms show a clear tendency to emphasise internal attributions, other studies find a somewhat more mixed picture.

The results reported here are most consistent with those by Bettman and Weitz (1983) who found that three of the four industries they analysed (Aerospace, Scientific Instruments, Telephone) showed a slight tendency to provide more internal attributions, while only Metal Mining firms showed a tendency to use external attributions. By contrast, Aerts (2005) found that firms from Mining & Metals/Production, as well as those from Construction gave significantly more external attributions than internal, but the authors did not detect a tendency regarding internal attributions. Moreover, Aerts and Tarca (2010) reported that Food Processors provide significantly more internal attributions, whereas significantly more external attributions were given by Building Materials, Pharmaceuticals, and again Food Processors.

6.5 Summary and conclusion

This chapter has described the sample used in the analysis and provided descriptive statistics for the level of attribution disclosure and the cost of capital estimates. The statistics show that the volume taken up by attributions of the total space of the

Table 6.4.5: Descriptive statistics for *WCN_INT* and *WCN_EXT* by industry

		WCN_INT							WCN_EXT						
	N*	Mean	StdDV	Median	25%	75%	Min	Max	Mean	StdDV	Median	25%	75%	Min	Max
Aerospace and Defense	5 (5)	0.026	0.021	0.023	0.010	0.044	0.003	0.060	0.014	0.007	0.011	0.010	0.020	0.008	0.025
Business Support Services	20 (23)	0.039	0.029	0.030	0.021	0.041	0.011	0.114	0.014	0.016	0.007	0.004	0.018	0.0003	0.058
Chemicals	5 (6)	0.049	0.042	0.033	0.027	0.080	0.024	0.125	0.026	0.023	0.015	0.011	0.047	0.009	0.065
Engineering	5 (6)	0.036	0.025	0.029	0.013	0.063	0.010	0.066	0.017	0.010	0.013	0.008	0.027	0.006	0.028
Food and Beverages	6 (6)	0.020	0.016	0.017	0.009	0.028	0.004	0.051	0.022	0.017	0.018	0.007	0.038	0.004	0.051
IT	5 (12)	0.061	0.041	0.042	0.028	0.103	0.018	0.118	0.018	0.014	0.015	0.007	0.030	0.005	0.039
Media	10 (12)	0.029	0.016	0.027	0.015	0.039	0.007	0.057	0.012	0.013	0.008	0.003	0.018	0.001	0.048
Oil and Gas	5 (6)	0.030	0.012	0.030	0.021	0.39	0.014	0.047	0.011	0.006	0.009	0.007	0.016	0.005	0.021
Retailers	14 (17)	0.033	0.018	0.028	0.019	0.044	0.012	0.072	0.019	0.017	0.013	0.008	0.026	0.003	0.070
Travel and Leisure	11 (12)	0.034	0.016	0.030	0.022	0.046	0.012	0.064	0.016	0.015	0.013	0.006	0.022	0.001	0.053
Utilities	5 (5)	0.032	0.032	0.019	0.004	0.066	0.001	0.071	0.008	0.008	0.006	0.002	0.01	0.001	0.022
Other**	20 (32)	0.039	0.022	0.035	0.021	0.045	0.013	0.089	0.032	0.032	0.024	0.012	0.042	0.004	0.149

*Based on 111 firms after eliminating all firms not providing internal or external attributions; the initial number of sample firms in each industry is given in ().

**Other subsumes industries with less than 5 observations and includes Consumer Goods, General Industrials, Healthcare Equipment and Services, Mining and Basic Resources, Pharmaceuticals and Biotechnology, Telecommunication, Transportation. In addition, it includes Construction and Construction Materials, Electronic and Electrical Equipment, and Household Goods as these industries contain less than 5 firms that give both internal and external attributions.

narrative sections (*WCN*) is generally low, and the low standard deviation indicates that the volume is fairly stable across firms and does not vary much.

Focusing on internal and external attributions separately (*WCN_INT / WCN_EXT*) shows that firms have a clear tendency to explain performance outcomes with internal factors rather than with external reasons. The finding of a predominance of internal attributions provides some support for the suggestion by Salancik and Meindl (1984) that firms would attribute performance more to causes internal to the firm in order to demonstrate they are in control. This tendency is present for firms with increasing as well as decreasing performance, thus a self-serving attribution behaviour (attributing good outcomes to internal reasons but bad outcomes to external reasons) as reported by previous research is not present in the sample. Looking at the attribution disclosure by industry confirms the tendency for using internal over external attributions. Firms across all industries tend to use internal attributions rather than external attributions to explain their performance outcomes and give more space to internal than to external explanations.

This chapter has also presented the descriptive statistics for the sample firms' cost of equity capital estimates. The mean cost of equity capital of the sample firms is 9.76%, with the majority of firms having a cost of equity capital between 5% and below 15%. Analysing the industry cost of equity capital showed that the industries with the highest average cost of equity capital are IT, Aerospace and Defense, Chemicals, and Electronic and Electrical Equipment whereas those with the lowest are Oil & Gas, Travel and Leisure, Food and Beverages, and Media.

Having done the descriptive analysis for the variables and obtained a first overview of the data, the next chapter presents the results from the regression analysis on the determinants of attribution statement disclosure.

CHAPTER 7

CORPORATE GOVERNANCE, FIRM-SPECIFIC FACTORS AND ATTRIBUTION STATEMENTS

7.1 Introduction

Performance attributions are an important part of a firm's information disclosures to the capital market. Chapter 3 has presented a theoretical framework for explaining attribution disclosure. It has also established a number of hypotheses about how a firm's corporate governance and firm-specific characteristics influence the disclosure of performance explanations in UK listed firms' annual reports. In the previous chapter 6, the data collected in order to test the hypotheses was described. This chapter now reports the results of tests of the hypotheses on the relationship between attribution provision and corporate governance and firm-specific characteristics discussed in chapter 3.

The chapter is structured as follows: Section 7.2 presents the regression model. Section 7.3 describes the tests for normality of the data and any data transformations carried out prior to further analysis. Section 7.4 presents the univariate correlations between the attribution disclosure measures and the independent variables. Section 7.5 presents the results of the multiple regression analysis, and Section 7.6 reports on additional tests that were carried out. The chapter concludes with a summary in

Section 7.7.

7.2 Regression model

The regression model used to investigate the determinants of attribution disclosure has been specified in chapter 5 as follows:

$$\begin{aligned} Attributions &= \beta_0 + \beta_1 PropNED + \beta_2 Dirown + \beta_3 ACSize + \beta_4 ACExp \\ &\quad + \beta_5 Size + \beta_6 AF + \beta_7 Gear + \beta_8 Profit + \beta_9 Perf \\ &\quad + \beta_{10} Issue + \epsilon \end{aligned} \tag{7.2.1}$$

PropNED	=	Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board
Dirown	=	Executive director share ownership, measured as the percentage of shares held by firm executive directors
ACSize	=	Audit committee size, measured as the number of directors on the audit committee
ACExp	=	Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee
Size	=	Firm size, measured as market value of equity at financial year end in £m
AF	=	Analyst following, measured as the number of analysts following a firm
Gear	=	Gearing ratio, measured as long-term debt divided by long-term debt plus shareholders' equity at fiscal year end
Profit	=	Firm profitability, measured as return on assets
Perf	=	Change in financial performance from the previous financial year, measured as indicator variable taking the value of 1 if the firm's operating profit has decreased from the previous year; 0 otherwise
Issue	=	Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise
Attributions	=	Attribution disclosure, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report
β	=	Regression coefficient
ϵ	=	Error term

As the measure for attribution statement disclosure in the regression analysis, the thesis uses the wordcount of attributions as percentage of the total wordcount of the firm's narrative disclosures (*WCN*). Three separate regressions are run using (1) the aggregate measure of attributions (*WCN*), (2) the internal attributions (*WCN_INT*) and (3) the external attributions (*WCN_EXT*) separately.

7.3 Normality tests and data transformations

In chapter 5, section 7.3, the importance of data normality for regression analysis was discussed. This section reports the results of normality tests for both the dependent and the continuous independent variables. In order to test for deviations from normality, the Kolmogorov-Smirnov (KS) test as well as an inspection of histograms was carried out. If a distribution is normal, the values for skewness and kurtosis should be zero or close to zero (see, Field 2009; Bryman and Cramer 2009). For normal distributed data, the KS statistic will be insignificant ($p>0.05$). The test results are provided below in Table 7.3.1.

It can be seen from Table 7.3.1 Panel A that only *Gear* is normally distributed and the remaining variables show deviations from a normal distribution. This finding is supported by visual inspection of histograms which show that all variables except *Gear* are not normally distributed. All exhibit positive skewness except for *Profit*, which is slightly negatively skewed. Inspection of QQ-plots shows that for several variables there are deviations of the observations from the expected straight line. Moreover, the visual inspection procedure detected the presence of outlying values in several variables, in particular for *Profit*. Histograms and QQ-Plots are provided in the Appendix (A.3.1 - A.3.5).

Based on these findings, it was decided to transform the variables with severe normality failures. A transformation also helps reduce outlier problems (see Tabachnick and Fidell 2007). Which type of data transformation is appropriate depends on the strength and direction of the normality violation. For positive skewness, common

Table 7.3.1: Normality tests and transformations

		Mean	Median	StdDV	Skew.	Kurt.	K-S Lilliefors	K-S Sign.
Panel A: Untransformed variables								
Firm characteristics								
Size		1955.944	402.400	4165.979	3.685	15.217	0.320	0.000
Gear		0.404	0.415	0.255	0.561	0.918	0.066	0.200*
Profit		0.059	0.057	0.059	-0.579	6.230	0.121	0.000
AF		7.590	5.000	6.212	0.905	-0.096	0.183	0.000
Corporate governance characteristics								
PropNED		0.511	0.500	0.126	0.469	0.107	0.129	0.000
ACSize		3.295	3.000	0.913	0.850	0.859	0.303	0.000
ACExp		0.475	0.500	0.246	0.503	0.135	0.171	0.000
Dirown		0.056	0.009	10.748	2.655	7.175	0.301	0.000
Disclosure measures								
WCN		0.052	0.045	0.034	1.640	5.264	0.140	0.000
WCN_INT		0.037	0.030	0.026	1.440	2.126	0.139	0.000
WCN_EXT		0.019	0.013	0.020	2.985	14.149	0.219	0.000
Panel B: Transformed variables								
Size	*Ln*	6.233	6.173	1.796	0.129	-0.693	0.060	0.200*
Profit	*WS95*[a]	0.056	0.051	0.046	0.396	0.242	0.085	0.048
Dirown	*Ln*	-0.137	-0.069	2.289	-0.259	-0.244	0.057	0.200*
WCN	*NS*	0.031	0.034	0.964	-0.026	-0.194	0.010	0.200*
WCN_INT	*NS*	0.034	0.017	0.955	0.025	-0.242	0.011	0.200*
WCN_EXT	*NS*	0.023	0.042	0.975	-0.050	-0.296	0.016	0.200*

Size = Firm size, measured as market value of equity at financial year end in £m. Gear = Gearing ratio, measured as long-term debt to long-term debt plus equity. Profit = Firm profitability, measured as return on assets. AF = Number of analysts following a firm, measured as the number of analysts following a firm. PropNED = Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board ACSize = Audit committee size, measured as the number of directors on the audit committee. ACExp = Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee. Dirown = Executive director ownership, measured as the percentage of shares held by executive directors. WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative disclosures of a firm excluding the notes to the financial statements. WCN_INT = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements. WCN_EXT = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements.

**This is a lower bound of the true significance*

[a] *WS95 = Winsorised at 95% level; NS = Normal score transformation.*

transformations are taking the square root (for mild departures from normality) or the log of a variable (for more severe cases) (see Tabachnick and Fidell 2007, Pallant 2007, and Field 2009). Table 7.3.1 Panel B exhibits the transformed variables. *Size* and *Dirown* were transformed using natural log due to their positive skewness and strong deviations from normality. *Profit* has no severe issues with skewness but visual inspection indicated a multitude of outliers at the lower end of the distribution. Therefore, the decision was taken to winsorise the data, a technique used to reduce the influence of outliers (see, e.g. Tabachnick and Fidell 2007; Muino and Trombetta 2009). When data are winsorised, the top and bottom ends of the distribution are set equal to a specified percentile or value of the data. This procedure reduces the influence of extreme values at both ends of the distribution without removing the observations from the sample, and so improves the distribution of the data. In this thesis, *Profit* was winsorised at the 5th and 95th percentile, that is values below the 5th percentile were set to the value at the 5th percentile, and values above the 95th percentile were set to the value at the 95th percentile, resulting in a normally distributed variable.

Gear remained untransformed as the tests showed a normal distribution. The variables *AF, PropNED*, *ACSize*, and *ACExp* remained untransformed as well because 1) regarding *AF,* and *ACSize*, Tabachnick and Fidell (2007) recommend leaving variables untransformed which are measured on a meaningful scale (as is the case for *AF* and *ACSize*: number of analysts or members measured as integers) as a transformation makes interpretation more complicated; 2) for *PropNED* and *ACExp* the values for skewness and kurtosis were judged as being reasonably close to zero.

Regarding the disclosure measures, it can be seen from Table 7.3.1 Panel A that the disclosure measures show deviations from a normal distribution. To correct for these violations, the attribution disclosure variables were transformed using normal scores, a technique frequently applied to disclosure measures in the literature (see e.g. Cooke 1998; Haniffa and Cooke 2002; Haniffa and Cooke 2005; Mangena and Pike 2005). The normal scores approach is a transformation technique which replaces the value of an observation with the scores on the normal distribution, and is appropriate

when the relationship between the dependent and independent variables is non-linear but monotonic (Cooke 1998). The advantage of the normal scores approach is that a non-normal dependent variable can be transformed to a normally distributed one, and it produces tests that have exact statistical properties (see Cooke 1998; Haniffa and Cooke 2005). Moreover, the method reduces the influence of outliers in the attribution measures which were revealed by visual inspection.

7.4 Univariate Analysis

This section presents the results of investigating the univariate correlations between the attribution disclosure measure and the independent variables. The correlation between the attribution disclosure measure and each independent variable provides a first understanding of how each independent variable relates to disclosure. In the previous section the data was tested for normality and measures were taken, where appropriate, to obtain a more normal distribution of variables with normality violations. Hence the analysis is carried out on the transformed variables using the Pearson product moment correlation coefficient, which is appropriate for normally distributed data (Field 2009). Table 7.4.1 shows the Pearson correlations between the disclosure measures and the continuous independent variables.

Table 7.4.1: Correlations attribution disclosure measures and continuous independent variables

	WCN	*WCN_INT*	*WCN_EXT*
Panel A: Corporate Governance characteristics			
PropNED	0.078	0.106	-0.113
Dirown	0.191**	0.199**	0.224**
ACSize	-0.225***	-0.293***	-0.152
ACExp	0.127	0.086	0.073
Panel B: Firm characteristics			
Size	-0.286***	-0.219***	-0.364***
Gear	-0.081	-0.141	-0.233**
Profit	-0.202**	-0.111	-0.198**
AF	-0.283***	-0.253***	-0.310***

*** Correlation significant at the 0.01 level (2-tailed)

** Correlation significant at the 0.05 level (2-tailed)

* Correlation significant at the 0.10 level (2-tailed)

PropNED = Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board ACSize = Audit committee size, measured as the number of directors on the audit committee. ACExp = Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee. Dirown = Executive director ownership, measured as the percentage of shares held by executive directors. Size = Firm size, measured as market value of equity at financial year end in £m. Gear = Gearing ratio, measured as long-term debt to long-term debt plus equity. Profit = Firm profitability, measured as return on assets. AF = Number of analysts following a firm, measured as the number of analysts following a firm. WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative disclosures of a firm excluding the notes to the financial statements. WCN_INT = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements. WCN_EXT = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements.

Panel A of Table 7.4.1 presents the correlations of the attribution measures with the firm's corporate governance characteristics. *WCN* shows a significant positive association with director ownership ($p<0.05$) and a significant negative association with audit committee size ($p<0.01$). The proportion of non-executive directors and audit committee expertise are insignificant. *WCN_INT* has a significant positive association with director ownership ($p<0.05$) and a significant negative association with audit committee size ($p<0.01$). *WCN_EXT* shows a significant positive association with director ownership ($p<0.05$). These results suggest that at the overall

attribution provision level, firms in which executive directors hold a significant stake give more space to explaining performance outcomes, and such attributions are more likely to give more internal and external factors. The results for the audit committee size suggests that the larger the audit committee, the lower the level of attribution, particularly internal attributions.

Panel B of Table 7.4.1 presents the correlations of the attribution measures with firm characteristics. For *WCN*, firm size shows a significant negative association ($p<0.01$), as does profitability and analyst following with a significance level of $p<0.05$ and $p<0.01$, respectively. Gearing is insignificant. This suggests that more space is given to performance explanations by firms that are smaller, less profitable, and are followed by fewer analysts. The *INT/EXT* components of wordcount show slightly different associations with firm characteristics than the aggregate *WCN*. *WCN_INT* exhibits significant negative associations with firm size ($p<0.01$) and analyst following ($p<0.01$), consistent with aggregate *WCN*, yet profitability is insignificant. Thus firms that are smaller and are followed by fewer analysts give more space for attributions to internal reasons. *WCN_EXT* has a significant negative association with all firm characteristics, firm size ($p<0.01$), analyst following ($p<0.01$), profitability ($p<0.05$) and gearing ($p<0.05$). Hence more space to external performance explanations seems to be given by smaller, less profitable, and lower geared firms, that are followed by fewer analysts.

Table 7.4.2 presents the analysis of the associations of the disclosure measures with the categorical independent variables.

Table 7.4.2: Independent samples t-tests for disclosure measures and categorical independent variables

	WCN		*WCN_INT*		*WCN_EXT*	
Perf [a]						
	Neg	Pos	Neg	Pos	Neg	Pos
N[b]	80	62	80	60	63	50
Mean	0.111	-0.072	0.057	0.007	0.169	-0.159
StdDV	0.954	0.987	0.915	1.011	0.992	0.931
t-value	1.125		0.328		1.797*	
Issue						
	Yes	No	Yes	No	Yes	No
N	*28*	*114*	*28*	*112*	*23*	*90*
Mean	*-0.245*	*0.099*	*-0.215*	*0.096*	*-0.047*	*0.042*
StdDV	*0.900*	*0.971*	*0.873*	*0.967*	*0.788*	*1.021*
t-value	*-1.709**		*-1.551*		*-0.388*	

*** Correlation significant at the 0.01 level (2-tailed)

** Correlation significant at the 0.05 level (2-tailed)

* Correlation significant at the 0.10 level (2-tailed)

[a] *Perf*: Performance change from last financial year (negative = 1, positive = 0) measured as the percentage change in return on assets from the previous year; *Issue*: Issue of shares in the fiscal year following the publication of the annual report; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise.

[b] N varies as not every firm provided both internal and external attributions. *WCN* is based on 142 observations, *WCN_INT* is based on 140 observations, and *WCN_EXT* is based on 113 observations.

WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative disclosures of a firm excluding the notes to the financial statements. WCN_INT = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements. WCN_EXT = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements.

The results in Table 7.4.2 show that there is a significant difference in the space given to external attribution statements *(WCN_EXT* $p<0.10$) between firms with increasing or decreasing performance (*Perf*) from the previous financial year. This suggests that firms whose performance has decreased give more space to attributing performance outcomes to external reasons. For share issue (*Issue*), *WCN* shows a significant difference ($p<0.10$), suggesting that firms issuing shares in the next financial year devote a lower percentage of their narrative disclosures to explaining their financial performance.

7.5 Multiple regression analysis

Whilst the correlation analysis provides some insights into the relationship between attribution provision and the different factors, one cannot conclude that relationships exist because univariate analysis suffers from the omitted variables problem. In this case the relationships observed might be a result of other variables not controlled for. In order to address this problem, multiple linear regression analysis was carried out. The results are reported in the following sections.

7.5.1 Regression assumptions

Multiple regression analysis is based on a number of assumptions in order to ensure validity of the results. These assumptions have been discussed in chapter 5, section 5.7.3, and include normality, linearity, homoscedasticity, and independence of error terms. Additionally, multicollinearity of the data and the existence of influential data points has to be ruled out. To test whether these assumptions were met, both visual and numerical methods were used.

Multicollinearity between the independent variables was assessed by means of the correlation matrix presented in Table 7.5.1. The table reveals a number of significant correlations between the independent variables. However, except for the correlation between the firm size measure (*Size*) and analyst following (*AF*), all of the correlations are below the cut-off limit of 0.8 to 0.9 suggested in the literature as problematic (see Gujarati 2003; Field 2009). The high correlation between analyst following and firm size (0.873) means that analyst following and firm size cannot be included in the same regression model.

In addition to examining the correlation matrix, the Variance Inflation Factor (VIF) were also examined. The results, as included in the regression statistics in the next section show that, after separating analyst following and the firm size measures into separate regression models, none of the values comes close to or exceeds the value of 10 suggested as a limit for VIF (see e.g. Stevens 2002, Gujarati 2003). Hence multicollinearity is not considered to be a problem. In order to assess whether

Table 7.5.1: Correlation Matrix independent variables (Pearson)

	PropNED	*Dirown*	*ACSize*	*ACExp*	*Size*	*AF*	*Gear*	*Profit*	*Perf*	*Issue*
PropNED	1.000									
Dirown	-0.252***	1.000								
ACSize	0.310***	-0.287***	1.000							
ACExp	0.025	0.116	-0.134	1.000						
Size	0.334***	-0.541***	0.544***	-0.169**	1.000					
AF	0.260***	-0.515***	0.472***	-0.165*	0.873***	1.000				
Gear	0.068	-0.391***	0.234***	-0.040	0.344***	0.352***	1.000			
Profit	-0.063	0.049	-0.027	-0.080	0.247***	0.224***	-0.210**	1.000		
Perf	-0.014	0.136	-0.042	0.208**	-0.134	-0.079	0.081	-0.297***	1.000	
Issue	-0.018	0.031	-0.064	-0.036	0.041	0.067	-0.014	-0.089	-0.028	1.000

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed); *Correlation significant at the 0.10 level (2-tailed)

PropNED = Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board. Dirown = Executive director ownership, measured as the percentage of shares held by executive directors. ACSize = Audit committee size, measured as the number of directors on the audit committee. ACExp = Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee. Size = Firm size, measured as market value of equity at financial year end in £m. AF = Number of analysts following a firm, measured as the number of analysts following a firm. Gear = Gearing ratio, measured as long-term debt to long-term debt plus equity. Profit = Firm profitability, measured as return on assets. Perfchange = Dummy variable, taking the value of 1 if the firm's performance has deteriorated from the previous financial year, measured as the percentage change in return on assets from the previous year; 0 otherwise. AF = Number of analysts following a firm. Issue = Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise.

any observations have undue influence on the regression results, that is the capacity to influence or change the regression coefficients (see Field 2009; Tabachnick and Fidell 2007), Cook's distance was used and revealed that there are no influential data points that might influence the results as all values are below the limit of 1 (Cook and Weisberg 1982). Furthermore, to ascertain that the regression residuals are independent from each other and there is no correlation, the Durbin-Watson test (DW) was employed. The DW statistics of around the value of 2 demonstrate independence of the error terms (see Field 2009) (test statistics for both tests are provided in Appendix A.4.1). Finally, to assess whether the regression assumptions of linearity (existence of a linear relationship between the variables) and homoscedasticity (constant variance of the residuals) are met, plots of the regression residuals versus expected values were analysed. The plots show that the assumptions are met, as the data points are randomly dispersed in the scatterplot and do not follow any pattern indicative of a failure of these assumptions. The data plots for normality, linearity, and homoscedasticity are provided in the Appendix (A.3.6 - A.3.8).

7.5.2 Multiple regression results

This section presents the results from the multiple regression analysis. The first step is to obtain an overview of model fit and the significance of variables. Table 7.5.2 exhibits the results.

As noted in section 7.2, there are three models: the aggregate attribution (*WCN*) model; the internal attribution (*WCN_INT*) model and the external attribution (*WCN_EXT*) model. For each of the three models, two separate sub-models were created to deal with the multicollinearity problem between firm size (*Size*) and analyst following (*AF*). In respect of the aggregate attribution (*WCN*) model, Table 7.5.2 shows that the model has an Adjusted R^2 of 12.9% and 12.8% and F-value of 3.314 and 3.305, for the *Size* model and *AF* model respectively. The significance of

Table 7.5.2: Multiple regression results for the effect of corporate governance and firm-specific characteristics on attribution statement disclosure

	WCN			*WCN_INT*			*WCN_EXT*		
Variable	*Size*	*AF*	VIF	*Size*	*AF*	VIF	*Size*	*AF*	VIF
Constant	1.229	0.773		0.911	0.737		2.231**	1.591	
PropNED	2.275**	2.208**	1.215	2.458**	2.568**	1.211	-0.259	-0.589	1.220
Dirown	1.409	1.416	1.565	1.798*	1.570	1.571	0.110	0.326	1.535
ACSize	-1.985**	-2.196**	1.542	-2.572**	-2.468**	1.520	0.444	0.025	1.668
ACExp	0.520	0.514	1.083	0.260	0.202	1.088	-0.113	-0.033	1.100
Size	-1.019		2.335	-0.052		2.296	-1.911*		2.441
AF		-0.987	1.994		-0.664	1.978		-1.155	2.032
Gear	0.151	0.135	1.361	-0.484	-0.335	1.350	-1.715*	-1.963*	1.378
Profit	-1.967*	-2.056**	1.417	-1.616	-1.415	1.393	-1.318	-1.563	1.410
Perf	-0.177	-0.109	1.177	-0.636	-0.563	1.180	0.941	1.089	1.261
Issue	-2.071**	-2.050**	1.044	-1.971*	-1.860*	1.043	-0.326	-0.413	1.041
Adj.R^2	12.9	12.8		10.8	11.1		11.0	9.0	
F-value	3.314	3.305		2.871	2.929		2.531	2.227	
SE	0.900	0.900		0.901	0.900		0.913	0.924	
Sign.	0.001	0.001		0.004	0.003		0.012	0.026	
N	142	142		140	140		113	113	

*** Correlation significant at the 0.01 level (2-tailed) ** Correlation significant at the 0.05 level (2-tailed); * Correlation significant at the 0.10 level (2-tailed)

VIF = Variance inflation factor. Constant = Regression constant

(continued on next page)

Table 7.5.2 continued

Adj. R2 = Explanatory power of the regression model for variance in *WCN*. F-value = Indicator for statistical significance of the regression model. SE = Standard Error. Sign. = Significance level for the predictive ability of the regression model. *PropNED = Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board. Dirown = Executive director ownership, measured as the percentage of shares held by executive directors. ACSize = Audit committee size, measured as the number of directors on the audit committee. ACExp = Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee. Size = Market value of equity at financial year end in £m. AF = Number of analysts following a firm. Gear = Gearing ratio, measured as long-term debt to long-term debt plus equity. Profit = Firm profitability, measured as return on assets. Perfchange = Dummy variable, taking the value of 1 if the firm's performance has deteriorated from the previous financial year, measured as the percentage change in return on assets from the previous year; 0 otherwise. AF = Number of analysts following a firm. Issue = Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise. WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative disclosures of a firm excluding the notes to the financial statements. WCN_INT = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements. WCN_EXT = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements.*

p<0.01 suggests that it has significant power to explain variation in the volume of attribution provided in the narrative sections of the annual report.

Four of the variables in the model are significantly associated with the volume of explanations provided. In terms of the corporate governance factors and for both the *Size* model and the *AF* model, the results show that *PropNED* is positively related to attributions at the 5% level or better. *ACSize* is negatively related to attributions at the 5% level or better for both the *Size* and the *AF* model. The variables *Dirown* and *ACExp*, although positively related to attribution measure, are not significant. With respect to the firm characteristics, the results show that *Profit* and *Issue* are both negative and significantly related to attributions at the 5% level or better. However, *Size*, *AF*, *Gear* and *Perf* are all not significantly related to attributions. With regard to the internal attribution (*WCN_INT*) model, the analyses are based on a reduced sample of 140 observations (instead of the total of 142) because only firms that provided internal attributions were included. Two firms did not provide internal attributions and were excluded. For the internal attribution (*WCN_INT*) model, Table 7.5.2 shows that the model has an Adjusted R^2 of 10.8% and 11.1% and F-value of 2.871 and 2.929, for the *Size* model and *AF* model respectively. The significance of p<0.01 suggests that the model has significant power to explain variation in the volume of internal attributions provided in the narrative sections of the annual report. Four of the variables in the *Size* model are significantly associated with the volume of internal attributions provided, whereas in the *AF* model three variables show a significant association with the volume of internal attributions. In terms of the corporate governance factors and for both the *Size* model and the *AF* model, the results show that *PropNED* is positively related to internal attributions at the 5% level or better. *ACSize* is negatively related to internal attributions at the 5% level or better for both the *Size* model and the *AF* model. The results show that *Dirown* (p<0.10) is positive and significantly related to internal attributions at the 10% level in the *Size* model, but not the *AF* model. Regarding firm characteristics, the results show that *Issue* is negative and significantly associated with internal attributions at the 10% level in both the *Size* model and the *AF* model. The results also show

that *ACExp*, *Size*, *AF*, *Gear*, *Profit* and *Perf* are all not significantly related to internal attributions. With regard to the external attribution (*WCN_EXT*) model, the analyses are based on a reduced sample of 113 observations because only firms that provided external attributions were included. Those firms that did not attribute performance outcomes to external factors were excluded. Table 7.5.2 shows that the external attribution (*WCN_EXT*) model has an Adjusted R^2 of 11.0 and 9.0 and F-value of 2.531 and 2.227, for the *Size* model and *AF* model respectively. The significance of $p<0.05$ for both the *Size* model and the *AF* model suggests that the model offers significant explanatory power to explain the variability in the volume of external attributions in the narrative sections of the annual report. Two of the variables in the *Size* model are significantly associated with the volume of external attributions provided, whereas in the *AF* model one variable shows a significant association with the volume of external attributions. In terms of corporate governance factors, the results show that none of the four corporate governance factors has a significant association with external attributions. *ACExp* and *PropNED* show a negative relation with external attributions, and *Dirown* and *ACSize* show a positive association with external attributions. With respect to firm characteristics, the results show that *Size* is negative and significantly related to external attributions at the 10% level. *Gear* is negative and significantly related to external attributions at the 10% level or better in both the *Size* and the *AF* model. However, *AF*, *Profit*, *Perf* and *Issue* are all not significantly related to external attributions.

7.5.3 Discussion of the regression results

The discussion of the regression results is split into two sections: corporate governance factors and firm-specific factors.

7.5.3.1 Corporate governance factors and attribution statements

A summary of the results of the association between the four corporate governance factors and attribution statements in annual reports is provided in Table 7.5.3.

Table 7.5.3: Summary of multiple regression results for the effect of corporate governance factors on attribution statement disclosure

	WCN (Ha)			***WCN_INT (Hb(i))***			***WCN_EXT (Hb(ii))***		
	Sign Pred.	Sign Obs. & Signif.		Sign Pred.	Sign Obs. & Signif.		Sign Pred.	Sign Obs. & Signif.	
Model		*MVE*	*AF*		*MVE*	*AF*		*MVE*	*AF*
PropNED (H1)	+	+**	+**	-/+	+**	+**	-/+	-	-
Dirown (H2)	-/+	+	+	-/+	+*	+	-/+	+	+
ACSize (H3)	+	-**	-**	-/+	-**	-**	-/+	+	+
ACExp (H4)	+	+	+	-/+	+	+	-/+	-	-

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed); * Correlation significant at the 0.10 level (2-tailed)

Sign Pred. = Sign of the association predicted; Sign Obs. & Signif. = Sign of the association observed & Significance level

PropNED = Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board. Dirown = Executive director ownership, measured as the percentage of shares held by executive directors. ACSize = Audit committee size, measured as the number of directors on the audit committee. ACExp = Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee. WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative disclosures of a firm excluding the notes to the financial statements. WCN_INT = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements. WCN_EXT = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements.

The proportion of non-executive directors on the board shows a significant positive association with both *WCN* ($p<0.05$) as well as with *WCN_INT* ($p<0.05$). Hence both Hypothesis H1a on the volume of attributions and Hypothesis H1b(i) on the volume of internal attributions are supported. The findings are consistent with those by, for instance, Chen and Jaggi (2000), Cheng and Courtenay (2006), Patelli and Prencipe (2007), Lim et al. (2007), and Baek et al. (2009) for overall disclosure levels, and by Li et al. (2008) for intellectual capital disclosure. The significant positive association with the volume of attribution disclosure (H1a) provides support for the argument that non-executive directors on the board contribute to better monitoring of management activities, which then can translate into enhanced discussions of

the factors influencing performance. These results are in line with Schaffer (2002) and Barton and Mercer (2005) who suggest that attributions are used by the board to assess managerial performance, and in this context, the NEDs might push for detailed attributions of performance to help them monitor. Schaffer (2002) argues that when the board of directors evaluates management's performance, NEDs will be less constrained by loyalties to the CEO or the fear of retaliation if they criticise the CEO, thus could be more free and objective in their assessment of firm performance. This suggests that NEDs, less subject to such 'social constraints' (Schaffer 2002) and more motivated by their duty of accountability to shareholders, might be more strict when scrutinising performance, thus would make management provide more detailed performance explanations to allow a thorough and well-grounded assessment of management performance.

In terms of the classification of attributions into internal and external, the significant positive association between the proportion of non-executive directors and internal attributions and the negative, although insignificant association with *WCN_EXT* indicates that firms with more non-executive directors on the board have the tendency to elaborate more on internal reasons to explain performance outcomes. These findings support Hypothesis H1b(i), but not H1b(ii). The arguments brought forward by Schaffer (2002) about the different attribution patterns by inside and outside directors can offer a guide to explaining this finding. Schaffer (2002) states that inside directors might be less critical of management, thus more 'predisposed' to make external attributions, due to either their proximity to the CEO or the fear of retaliation in case of being critical. Non-executive directors, less constrained by these issues, can be more open and direct in the assignment of responsibility, and thus forcing managers to accept responsibility for organisational outcomes instead of blaming external factors for performance. Alternatively, since board of directors consider attributions for performance when assessing managers (Schaffer 2002; Barton and Mercer 2005), the managers might be inclined to provide detailed attributions for internal causes of performance in order to influence the board's decision. A good assessment is important for managers because of the related compensation and employment prospects.

However, it is also possible that non-executive directors might not necessarily be more efficient monitors of management's actions (see Schaffer 2002; Armstrong et al. 2010; Brickley and Zimmerman 2010). In this case it can be argued that due to time constraints and their very role as outsiders that denies them full and ready access to all the detailed information they would require (as much as inside directors have), non-executive directors might have to decide on a limited information basis. This would lead them to be less critical of management's explanations and more readily accept what is being presented to them. Hence, it would be easier for management to show self-serving behaviour and to claim responsibility for performance outcomes so as to show that they are in control and sending a confident and reassuring message to its stakeholders.

As the summary Table 7.5.3 shows, the association between executive director ownership and aggregate attributions (*WCN*) is positive but insignificant. This suggests that the level of executive director ownership does not influence aggregate attributions (*WCN*) provided in the annual report, thus Hypothesis H2a is not supported. The insignificant association is consistent with results by, for instance, Forker (1992), Mangena and Pike (2005), Kelton and Yang (2008), Donnelly and Mulcahy (2008) who also fail to find a significant association of director ownership with general disclosure. The positive sign, however, implies that firms with higher managerial ownership would provide more detailed attributions.

Contrary to the results for the aggregate measure, executive director ownership shows a significant positive association with the volume of internal attribution statements (*WCN_INT*), thus providing support for Hypothesis H2b(i) of a significant association of director ownership with internal attributions. There is, however, no significant association between external attributions and executive director ownership, thus Hypothesis H2b(ii) is not supported. These results suggest that firms in which the executive directors own a higher percentage of the firm's shares are significantly more likely to provide detailed internal attribution statements than they would provide external attributions. Attributing performance to the firm's own actions might create an impression of confidence in management's abilities among existing and potential

investors, leading to positive effects for the firm's share price. This might benefit the directors (1) as they might be perceived as doing a good job, which improves their own job prospects, or (2) if they want to buy/sell shares in the firm.

Audit committee size shows a significant negative association with attribution statement provision. This is not consistent with Hypothesis H3a which suggested a positive relationship between *ACSize* and aggregate attribution disclosure (*WCN*), but is consistent with Hypothesis H3b(i) which suggested an association between *ACSize* and internal attribution disclosure (*WCN_INT*). The results are consistent with Karamanou and Vafeas (2005) who also find a negative relationship between *ACSize* and management earnings forecasts. Similar to the arguments presented by Karamanou and Vafeas (2005), a smaller audit committee may be more effective in monitoring corporate reporting processes and might be in a better position to challenge management on their attribution behaviour. Larger groups may be less effective due to internal coordination problems and poorer communication and decision making, hence reducing monitoring and control capabilities (see Lipton and Lorsch 1992; Jensen 1993; John and Senbet 1998). Hence previous research argues (e.g. Karamanou and Vafeas 2005; Felo et al. 2003) that when the audit committee is large, responsibilities are less clear and decisions are not effectively made. Also a large committee may become easy to control by managers (see Alexander et al. 1993; Jensen 1993), which can further reduce monitoring effectiveness. The significant negative association between *ACSize* and internal attributions (*WCN_INT*) provides support for H3b(i) and suggests that firms with smaller audit committees would provide more extensive explanations to internal reasons for performance. Hypothesis H3b(ii) is not supported as there is no significant association between audit committee size and external attributions (*WCN_EXT*). This suggests that audit committee size does not affect the provision of explanations that give external reasons for performance.

Finally, the results reveal that the relationship between audit committee expertise and attribution statements is not significant in all three models, hence Hypothesis H4a, H4b(i) and H4b(ii) have to be rejected. The results suggest that audit committee expertise does not influence how extensive managers explain the firm's

performance outcomes. This result is not consistent with previous disclosure studies showing that audit committee expertise is associated with disclosure (e.g. Felo et al. (2003); Karamanou and Vafeas 2005; Mangena and Pike 2005; Kelton and Yang 2008).

7.5.3.2 Firm-specific factors and attribution statements

A summary of the results of the association between firm-specific factors and attribution statements in annual reports is provided in Table 7.5.4.

Table 7.5.4: Summary of multiple regression results for the effect of firm-specific factors on attribution statement disclosure

	WCN (Ha)			***WCN_INT (Hb(i))***			***WCN_EXT (Hb(ii))***		
	Sign Pred.	Sign Obs. & Signif.		Sign Pred.	Sign Obs. & Signif.		Sign Pred.	Sign Obs. & Signif.	
Model		*MVE*	*AF*		*MVE*	*AF*		*MVE*	*AF*
Size (H5)	+	-		-/+	-		-/+	-*	
AF (H6)	+		-	-/+		-	-/+		-
Gear (H7)	+	+	+	-/+	-	-	-/+	-*	-*
Profit (H8)	-/+	-*	-**	-/+	-	-	-/+	-	-
Perf (H9)	+	-	-	-/+	-	-	+	+	+
Issue (H10)	+	-**	-**	+	-*	-*	-/+	-	-

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed); * Correlation significant at the 0.10 level (2-tailed)

Sign Pred. = Sign of the association predicted; Sign Obs. & Signif. = Sign of the association observed & Significance level

Size = Firm size, measured as market value of equity at financial year end in £m. AF = Analyst following, measured as the number of analysts following a firm. Gear = Gearing ratio, measured as long-term debt to long-term debt plus equity. Profit = Firm profitability, measured as return on assets. Perfchange = Dummy variable, taking the value of 1 if the firm's performance has deteriorated from the previous financial year, measured as the percentage change in return on assets from the previous year; 0 otherwise. Issue = Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise. WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative disclosures of a firm excluding the notes to the financial statements. WCN_INT = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements. WCN_EXT = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements.

The findings show that, contrary to Hypothesis H5a and H5b(i), firm size is

not significantly related to aggregate attribution (*WCN*) and internal attributions (*WCN_INT*). This implies that firm size does not influence the detail by which firms attribute performance outcomes. These results are consistent with Aerts (1994) who also did not find an association between firm size and attributions. The results are in contrast to previous disclosure literature that found a significant positive association between disclosure and firm size (e.g. Wallace and Naser 1995; Meek et al. 1995; Hossain et al. 1995; Cerbioni and Parbonetti 2007; Lim et al. 2007). They are also inconsistent with other attribution disclosure studies (e.g. Aerts 2005; Baginski et al. 2004; Baginski et al. 2008) that also report a positive association. The differences between this study and Baginski et al. (2004) and Baginski et al. (2008) may be the result of differences in the way attributions were measured. The two studies used a 1/0 (disclosed/not disclosed) measure of attribution disclosure, only recording the presence/absence of an attribution statement in management's earnings forecasts, whereas this study measures attribution provision as the percentage of words of a firm's attribution statements to the total wordcount of the annual report narratives.

However, the relationship between external attributions (*WCN_EXT*) and firm size is negative and significant, thus supporting Hypothesis H5b(ii). The negative coefficient suggests that large firms provide less detail in attributing performance outcomes to external factors. These results are inconsistent with Baginski et al. (2004) and Baginski et al. (2008), but they are in line with Aerts (2005). Aerts (2005) found a significant negative association between firm size and external attribution tendencies, and a significant positive association with internal (and self-acclaiming) attributions. A possible explanation for the negative association found here is that large firms have a multitude of other issues to report in their narrative sections, compared to smaller firms, such that the wordcount for attributions can be a very insignificant proportion of the total word count in the narrative sections. Additionally, larger firms tend to be followed by more analysts (see e.g. Lang and Lundholm 1996; Botosan 1997), and analysts hold private meetings with managers in which the factors for performance might have been discussed (see Holland 1998). Therefore, large firms might not be under pressure to provide detailed explanations to the market.

Moreover, it can be argued that bigger firms have larger resources at their disposal and would be less susceptible than smaller firms to the effect of external shocks and factors that can influence performance. This suggests that bigger firms would have less need to explain performance with external reasons as they are less vulnerable to such influences. This also suggests that if larger firms blamed the environment for their performance, it might be perceived as less credible.

For the number of analysts following a firm (*AF*), no significant influence on the overall volume nor on the type of attribution statements was found, hence Hypothesis H6a, H6b(i) and H6b(ii) have to be rejected. The negative sign for the aggregate disclosure measure (*WCN*) is contrary to expectations. This suggests the possibility that analyst following has a negative effect on the detail of performance explanations. Potentially analysts have access to detailed information via different routes (for instance, direct meetings with management, conference calls), hence the information needs of this user group are met in another way already.

In terms of gearing (*Gear*) the association between gearing and attributions is not significant for aggregate attributions (*WCN*) and internal attributions (*WCN_INT*), hence Hypotheses H7a and H7b(i) are rejected. These findings are similar to previous disclosure research (e.g. Wallace and Naser 1995, Haniffa and Cooke 2005, Mangena and Pike 2005, Lim et al. 2007). However, the association between *Gear* and external attributions (*WCN_EXT*) is negative and significant at the 10% level or better, thus supporting Hypothesis H7b(ii). It is possible that highly geared firms, given that they are perceived as riskier by investors, might be prepared to take responsibility for performance to demonstrate that they are in control. By attributing performance outcomes less to external influences, management can send a message to investors that performance is not subject to outside factors but that management has control over the outcomes and shapes the course of the firm. This may alleviate investor concerns about the safety of their investment in a firm with higher gearing. Thus, in line with signalling theory, management may try and convince investors that the firm is not as risky as perceived and that investors' claims against the firm are safe (see Salancik and Meindl 1984).

In line with the findings by Wallace and Naser (1995) and Chen and Jaggi (2000) regarding overall disclosure, the association between profitability (*Profit*) and the volume of aggregate attributions (*WCN*) is negative and significant at the 5% level or better, thus H8a is supported. These findings suggest that more profitable firms would provide less extensive attributions. Proprietary costs theory suggests that, although non-disclosure of information can be perceived negative by the capital market (Verrecchia 2001), firms may decide to provide less information for fear of providing valuable information about the firm to competitors (e.g. Dye 1986; Gibbins et al. 1990). In this case, highly profitable firms may avoid explaining the reasons for their performance in more detail as this may provide competitors with valuable information about their operations. Another possible reason is that profitable firms may have less pressure from the market to explain the reasons for their good performance in more detail because the market might be content with the good results.

The association of profitability and both internal attributions (*WCN_INT*) and external attributions (*WCN_EXT*) is insignificant, thus Hypothesis H8b(i) and H8b(ii) are not supported. The negative sign, however, is in line with the results for aggregate attributions, and suggests that more profitable firms would provide less extensive attribution statements regardless of whether they are to internal or to external factors that influenced performance. Providing less extensive internal explanations for profitability might be motivated by proprietary cost considerations, while providing less extensive explanations with external reasons might be an attempt to take responsibility for the good outcome and give less credit to external influences.

Focusing on performance change (*Perf*), the association between performance change and aggregate attribution disclosure (*WCN*) is not significant. Thus Hypothesis H9a which suggests that firms that experience a decline in financial performance face an increased need to explain this bad outcome and therefore will provide more attributions is not supported. Similarly, Hypothesis H9b(i) and H9b(ii) that firms with declining performance would show a different attribution behaviour in terms of internal and external explanations and tend to use external attributions to explain their performance is not supported.

Finally, share issue (*Issue*) is negatively associated with aggregate attributions (*WCN*) and internal attributions (*WCN_INT*) at the 5% level or better. Hence Hypothesis H10a and H10b(i) which proposed a positive association are both not supported. This implies that firms intending to access the capital market in the following year devote less space for attributing performance outcomes in their narrative disclosures than non-share issuing firms. A possible explanation for this result is that, as firms increase the overall disclosure and provide more information in their narrative sections prior to issuing shares (see Gibbins et al. 1990; Lang and Lundholm 1993; Lang and Lundholm 2000), the proportion of word count for performance explanations decreases as a result of the increase in total word count of the narrative sections. The Hypothesis that share issue (*Issue*) is associated with external attribution disclosure (*WCN_EXT*) is not supported (H10b(ii)).

7.6 Additional analysis

In order to assess the robustness of the results, three additional analyses were carried out. The tests suggest that the results of the main analysis are robust.

First, the main analysis found that audit committee expertise is not related to the disclosure of attribution statements. To explore whether the insignificance stems from expertise being measured with a proportion measure (proportion of the audit committee members with accounting and financial management expertise to the total size of the audit committee), the analysis is re-run with expertise measured with a 1/0 indicator variable indicating whether the audit committee has a member with relevant experience or not. It can be argued that already the basic difference of whether an audit committee has a member with relevant expertise or not will significantly improve its oversight capabilities, and influence the disclosure of attribution statements and lead to improvements in their provision. The proportion of experts on the audit committee, that is how many of the committee members have relevant expertise, constitutes a step further and might carry less significance for further improvements in attribution statement provision compared to the potential improvement introduced

by having an expert or not. Given that the sample contains a number of small firms, this suggestion may be of particular importance for smaller firms. That is, maybe just the fact of having an expert on the committee can improve the provision of attribution statements in smaller firms, while the proportion of experts may be of less significance for improving attribution statement provision once the committee contains a member that can potentially initiate improvements.

An examination of the sample shows that 14.8% of firms have no designated expert on the committee, whereas 85.2% have a least one member on the audit committee that has relevant accounting or financial management expertise.[1] The results of the regression analysis are presented in Table 7.6.1.

With regard to the aggregate attribution (*WCN*) measure, it can be seen from the table that the results are unchanged from the main findings, and *ACExp* remains insignificant. Of the remaining corporate governance factors, *PropNED* is positive and significant at the 5% level, and *ACSize* is significant and negative at the 5% level. *Dirown* remains insignificant. Regarding the firm characteristics, *Profit* and *Issue* are significant and negative at the 10% and 5% level, respectively. *Size*, *Gear* and *Perf* remain insignificant.

With regard to the internal attribution (*WCN_INT*) measure, the results are also consistent with the main results, only *PropNED* is less significant in the *AF* model. *PropNED* is positive and significant at the 5% level in the *Size* model, but only at the 10% level in the *AF* model, down from the 5% level in the main analysis. *ACSize* remains significant and negative at the 5% level. *Dirown* remains significant at the 10% level in the *Size* model and insignificant in the *AF* model. *ACExp* remains insignificant. Regarding the firm characteristics, *Issue* is significant and negative at the 10% level. *Size*, *Gear*, *Profit* and *Perf* remain insignificant.

With regard to the external attribution (*WCN_EXT*) measure, the results are consistent with the main results. Consistent with the main analysis, none of the cor-

[1] See previous chapter 6, section 2.

Table 7.6.1: Multiple regression results for the effect of corporate governance (using a 1/0 indicator for *ACExp*) and firm characteristics on attribution statement disclosure

	WCN			*WCN_INT*			*WCN_EXT*		
Variable	*Size*	*AF*	VIF	*Size*	*AF*	VIF	*Size*	*AF*	VIF
Constant	1.554	1.097		1.298	1.097		2.087**	1.486	
PropNED	2.332**	2.274**	1.204	2.487**	2.614*	1.196	-0.294	-0.614	1.201
Dirown	1.401	1.369	1.567	1.731*	1.446	1.577	0.139	0.357	1.540
ACSize	-1.983**	-2.143**	1.543	-2.501**	-2.318**	1.525	0.439	0.048	1.661
ACExp	-0.504	-0.623	1.079	-1.113	-1.125	1.087	0.516	0.353	1.067
Size	-1.010		2.342	0.037		2.305	-1.943*		2.427
AF		-1.048	1.994		-0.702	1.978		-1.151	2.010
Gear	0.184	0.192	1.365	-0.435	-0.256	1.351	-1.751*	-1.990**	1.368
Profit	-1.978*	-2.041**	1.418	-1.615	-0.563	1.393	-1.305	-1.566	1.411
Perf	-0.101	-0.031	1.141	-0.630	-0.563	1.133	0.948	1.111	1.223
Issue	-2.087**	-2.052**	1.043	-1.984*	-1.849*	1.043	-0.312	-0.407	1.040
Adj.R^2	12.9	12.9		11.6	11.9		11.2	9.1	
F-value	3.312	3.322		3.027	3.093		2.565	2.243	
SE	0.900	0.900		0.897	0.895		0.912	0.923	
Sign.	0.001	0.001		0.003	0.002		0.011	0.025	
N	142	142		140	140		113	113	

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed); * Correlation significant at the 0.10 level (2-tailed)

VIF = Variance inflation factor; Constant = Regression constant

(continued on next page)

Table 7.6.1 continued

Adj. R2 = Explanatory power of the regression model for variance in *WCN*. F-value = Indicator for statistical significance of the regression model. SE = Standard Error. Sign. = Significance level for the predictive ability of the regression model. *PropNED = Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board. Dirown = Executive director ownership, measured as the percentage of shares held by executive directors. ACSize = Audit committee size, measured as the number of directors on the audit committee. ACExp = Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee. Size = Firm size, measured as market value of equity at financial year end in £m. AF = Number of analysts following a firm, measured as the number of analysts following a firm99. Gear = Gearing ratio, measured as long-term debt to long-term debt plus equity. Profit = Firm profitability, measured as return on assets. Perfchange = Dummy variable, taking the value of 1 if the firm's performance has deteriorated from the previous financial year, measured as the percentage change in return on assets from the previous year; 0 otherwise. AF = Number of analysts following a firm. Issue = Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise. WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative disclosures of a firm excluding the notes to the financial statements. WCN_INT = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements. WCN_EXT = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements.*

porate governance factors shows a significant association with the attribution measure. Regarding the firm characteristics, *Size* remains negative and significant at the 10% level in the *Size* model. *Gear* remains negative and significant at the 10% level in the *Size* model, and increases significance to the 5% level in the *AF* model. The remaining firm characteristics remain insignificant. To sum up, the fact that *ACExp* remains insignificant across the disclosure measures supports the results in the main analysis and suggests that they are not sensitive to the measure of audit committee expertise.

The second analysis replaces the firm size measure used in this thesis, market value of equity, with total assets[2] as in other studies (e.g. Cooke 1989; Wallace and Naser 1995; Haniffa and Cooke 2005; Cerbioni and Parbonetti 2007). The results are presented in Table 7.6.2.

[2]Tests for a normal distribution of Total assets (*TA*) showed a strong deviation from normality. Based on the values for skewness and kurtosis, a Natural Log transformation was applied that resulted in a more normal distribution (see Appendix A.4.2).

Table 7.6.2: Multiple regression results for the effect of corporate governance and firm characteristics (using *Total assets*) on attribution statement disclosure

	WCN		*WCN_INT*		*WCN_EXT*	
Variable		VIF		VIF		VIF
Constant	1.257		0.946		2.233**	
PropNED	2.261**	1.211	2.493**	1.211	-0.320	1.217
Dirown	1.473	1.532	1.754*	1.543	0.234	1.540
ACSize	-1.999**	1.550	-2.483**	1.533	0.241	1.620
ACExp	0.470	1.096	0.231	1.104	-0.129	1.124
Size (TA)	-0.962	2.255	-0.222	2.237	-1.662*	2.305
AF						
Gear	0.189	1.404	-0.423	1.392	-1.767*	1.395
Profit	-2.521**	1.175	-1.765*	1.162	-2.074**	1.223
Perf	-0.198	1.176	-0.633	1.179	0.933	1.262
Issue	-2.105**	1.038	-1.956*	1.038	-0.447	1.029
Adj.R^2	12.8		10.8		9.8	
F-value	3.299		2.877		2.358	
SE	0.900		0.901		0.919	
Sign.	0.001		0.004		0.018	
N	142		140		113	

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed)
* Correlation significant at the 0.10 level (2-tailed); VIF = Variance inflation factor
Constant = Regression constant. Adj. R2 = Explanatory power of the regression model for variance in *WCN*. F-value = Indicator for statistical significance of the regression model. SE = Standard Error. Sign. = Significance level for the predictive ability of the regression model. *PropNED = Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board. Dirown = Executive director ownership, measured as the percentage of shares held by executive directors. ACSize = Audit committee size, measured as the number of directors on the audit committee. ACExp = Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee. Size = Firm size, measured as a firm's total assets at financial year end in £m. AF = Number of analysts following a firm, measured as the number of analysts following a firm. Gear = Gearing ratio, measured as long-term debt to long-term debt plus equity. Profit = Firm profitability, measured as return on assets. Perfchange = Dummy variable, taking the value of 1 if the firm's performance has deteriorated from the previous financial year, measured as the percentage change in return on assets from the previous year; 0 otherwise. AF = Number of analysts following a firm. Issue = Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise. WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative disclosures of a firm excluding the notes to the financial statements. WCN_INT = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements. WCN_EXT = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements.*

For the aggregate attribution (*WCN*) model, the results are consistent with those in the main analysis using market value of equity, as the same four variables are significant and the sign is consistent. For corporate governance factors, *PropNED* is positive and significantly related with attribution disclosure at the 5% level, and *ACSize* has a negative and significant association at the 5% level. Regarding firm-specific characteristics, *Profit* is negative and significantly associated with attribution disclosure at the 5% level (using *MVE* to measure firm size, the association is at the 10% level), and *Issue* is also negative and significantly associated with attributions at the 5% level. *Dirown*, *ACExp*, *Size*, *Gear* and *Perf* are insignificant.

For the internal attributions (*WCN_INT*) model, the results are also broadly consistent with the main analysis, in that the same four variables are significant, with the same sign and at the same significance levels. In addition to that, *Profit* becomes also significant at the 10% level compared to the main analysis. In terms of corporate governance factors, *PropNED* shows a positive and significant association with internal attributions at the 10% level, and *Dirown* is positive and significantly related to internal attributions at the 10% level. The relationship between *ACSize* and internal attributions is negative and significant at the 5% level. Regarding firm-specific factors, the negative but insignificant association between internal attributions and *Profit* observed in the main analysis becomes now significant at the 10% level, while *Issue* is negative and significant at the 5% level. *ACExp*, *Size*, *Gear* and *Perf* are insignificant.

The results for the external attribution (*WCN_EXT*) model are also consistent with the main analysis, except that *Profit* becomes significant. In terms of corporate governance factors, none of the factors is associated with external attribution disclosure, thus *PropNED*, *Dirown*, *ACSize* and *ACExp* are insignificant. Regarding firm characteristics, *Size* and *Gear* remain negative and significantly related to external attributions at the 10% level. *Profit* is negative and becomes significantly related to external attributions at the 5% level, while the variable was found insignificant in the main analysis. As this thesis measures profitability as return on assets, it might be

suggested that the significance of profitability is influenced by the inclusion of total asset size as measure of firm size. *Perf* and *Issue* are insignificant. Taken together, these results suggest that the findings are largely unaffected by using a different measure for firm size.

Third, previous attribution studies found industry differences in attribution behaviour (e.g. Bettman and Weitz 1983; Aerts 2005; Aerts and Tarca 2010). The main analysis in this thesis did not contain a control for industry differences in order to avoid too many independent variables in the main model and to maintain a ratio of independent variables to observations that allows strong conclusions to be drawn (see chapter 5). Hence, this additional analysis now examines potential industry effects on the results. Firms were classified into four industries based on the classification by Meek et al. (1995), and 1 (0) dummy variables were used to indicate a firm's membership in an industry. These industries are (1) engineering, (2) metals, building materials and construction, (3) consumer goods and services, and (4) oil, chemicals and mining. Further studies that used the Meek et al. (1995) classification include, for example, Mangena and Pike (2005) and Mangena and Tauringana (2007). The results of the regression are reported in Table 7.6.3.

As can be seen from the Table, the results for the corporate governance variables and the firm-specific factors are consistent with the main results, except one significant industry dummy in the external attribution (WCN_EXT) model. With regard to the aggregate attribution (WCN) model, the only difference is that profitability shows an increased significance level (5%) as compared to the main model (10%) when firm size is used. The attribution measure (WCN) is not associated with any of the industry dummies, suggesting that overall attribution disclosure is not associated with industry membership.

With regard to the internal attribution measure (WCN_INT), the results remain unchanged from the main analysis in terms of sign of the correlation and significance level. The only difference is *Issue*, which is now significant negative at the 5% level

Table 7.6.3: Multiple regression results for the effect of corporate governance and firm characteristics on attribution statement disclosure (including industry)

	WCN			*WCN_INT*			*WCN_EXT*		
Variable	*Size*	*AF*	VIF	*Size*	*AF*	VIF	*Size*	*AF*	VIF
Constant	0.915	0.563		0.911	0.616		1.746*	0.991	
PropNED	2.367**	2.319**	1.256	2.442**	2.534**	1.238	0.092	-0.166	1.275
Dirown	1.415	1.392	1.621	1.760*	1.517	1.623	0.292	0.514	1.616
ACSize	-2.032**	-2.215**	1.553	-2.547**	-2.437**	1.530	0.343	-0.124	1.596
ACExp	0.541	0.538	1.093	0.327	0.270	1.099	-0.211	-0.120	1.098
Size	-0.820		2.407	0.031		2.368	-1.566		2.410
AF		-0.834	2.045		-0.580	1.978		-0.776	2.076
Gear	-0.020	-0.033	1.393	-0.536	-0.380	1.398	-1.798*	-2.061**	1.337
Profit	-2.051**	-2.118**	1.464	-1.573	-1.361	1.428	-1.397	-1.564	1.353
Perf	-0.029	0.034	1.207	-0.549	-0.492	1.203	1.433	1.559	1.304
Issue	-2.143**	-2.117**	1.062	-2.041**	-1.913*	1.070	-0.345	-0.455	1.072
*Ind1**	0.274	0.252	1.064	0.697	0.627	1.048	0.948	1.467	1.058
Ind2	0.938	0.959	1.147	0.205	0.115	1.131	0.449	1.771*	1.123
Ind3	0.563	0.616	1.078	0.510	0.507	1.077	-0.832	0.947	1.079
Adj.R^2	11.6	12.1		9.2	9.4		12.4	10.8	
F-value	2.539	2.618		2.174	2.207		2.322	2.130	
SE	0.907	0.904		0.909	0.908		0.906	0.914	
Sign.	0.005	0.004		0.017	0.015		0.012	0.021	
N	142	142		140	140		113	113	

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed); * Correlation significant at the 0.10 level (2-tailed); VIF = Variance inflation factor; Constant = Regression constant

*Ind1 Metals, Building Materials and Construction; Ind2 Engineering; Ind3 Oil, Chemicals, Mining; Ind4 Consumer Goods and Services is the omitted industry category;

(continued on next page)

Table 7.6.3 continued

Adj. R2 = Explanatory power of the regression model for variance in *WCN*. F-value = Indicator for statistical significance of the regression model. SE = Standard Error. Sign. = Significance level for the predictive ability of the regression model. *PropNED = Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board. Dirown = Executive director ownership, measured as the percentage of shares held by executive directors. ACSize = Audit committee size, measured as the number of directors on the audit committee. ACExp = Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee. Size = Firm size, measured as market value of equity at financial year end in £m. AF = Number of analysts following a firm, measured as the number of analysts following a firm. Gear = Gearing ratio, measured as long-term debt to long-term debt plus equity. Profit = Firm profitability, measured as return on assets. Perfchange = Dummy variable, taking the value of 1 if the firm's performance has deteriorated from the previous financial year, measured as the percentage change in return on assets from the previous year; 0 otherwise. AF = Number of analysts following a firm. Issue = Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise. WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative disclosures of a firm excluding the notes to the financial statements. WCN_INT = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements. WCN_EXT = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements.*

(10% in the main model). None of the industry dummies is significant, suggesting that the disclosure of internal attribution statements is not associated with industry membership. The results for the external attribution measure (*WCN_EXT*), however, differ from the main results in two respects. First, when firm size is used, firm size loses significance and gearing remains the only significant variable (10% level). Second, when analyst following is used, although gearing remains negative and significant (with an increased significance level of 5% compared to the 10% in the main analysis), the results also show a positive and significant association between engineering firms (Industry 2) and the external attribution measure at the 10% level in the *AF* model. This suggests that engineering firms provide more extensive attributions to external reasons for performance.

The results for *WCN_EXT* suggest that industry membership influences the disclosure of external attribution statements, and also suggest that, if industry membership is included, there is no significant relationship between external attribution disclosure and firm size. These findings, however, have to be considered in light of the reduced sample size of 113 observations that is used for the external attribution model (as only those firms that provide external attributions are included) having to deal with the increase in the independent variables to 12 by including the industry dummies, as compared to 9 variables in the main analysis. The resulting ratio of observations to independent variables therefore drops to 9.42, which is below the minimum of 10 recommended for regression analysis in the literature (see e.g. Green 1991; Bartlett et al. 2001; VanVoorhis and Morgan 2001; Sekaran 2003). As the literature (e.g. Bartlett et al. 2001; Tabachnick and Fidell 2007) stresses, a ratio that is too low can limit the reliability and accuracy of the results, thus the generalisability of the findings. Tabachnick and Fidell (2007) highlight that a sample with a ratio that is too low would make it easier to detect significant relationships than when an adequate ratio was used. This suggests that the results for external attribution statements in the model including the industry dummies may be influenced by the low ratio of observations to independent variables, thus not necessarily be reliable and robust. The results for the aggregate attribution (*WCN*) measure and the internal

attribution (*WCN_INT*) measure, by contrast, are not subject to the same limitation in terms of the observation to variables ratio as they are based on the total sample size of 142 (140 observations for internal attributions), and these results are consistent with the main analysis. Hence it can be concluded from this analysis that no reliable influence of industry membership on attribution disclosure can be detected.

7.7 Summary and conclusion

This chapter has presented the results of tests of the hypotheses on the relationship between attribution provision and corporate governance and firm-specific characteristics. The multiple regression analysis has provided evidence for a significant influence of a number of these factors on the disclosure of performance explanations.

Regarding the corporate governance variables, the analysis has revealed that attribution disclosure is significantly associated with *PropNED*, *Dirown* and *ACSize*. Hence Hypotheses H1a and H1b(i), H2b(i), and H3a and H3b(i) are supported. For the remaining corporate governance factor, *ACExp*, no evidence was found that it influences attribution disclosure, thus Hypothesis H4a and H4b were not supported by the data.

A higher proportion of non-executive directors on the board is associated with a higher volume of attribution statements, and with a higher volume of internal attributions in the narrative sections of the annual report. This supports the argument that non-executive directors contribute to better monitoring and to stressing management's accountability for the firm's actions, which then can translate into better disclosure. The findings also support arguments that inside and outside directors attribute performance differently. The level of director ownership is not associated with the volume of aggregate attributions provided, but shows a significant positive association with the volume of internal attribution statements. This result lends some support to the suggestion that the higher management's stake in the firm, the easier it might be for them to attribute performance to their own actions, which might be an attempt to create an impression of confidence in management's abilities among

existing and potential investors and the wider public. Firms with larger audit committees provide less extensive attribution statements and elaborate less on internal explanations in their narrative sections. This suggests that smaller audit committees might be more effective monitors.

For the firm-specific characteristics, the analysis has revealed that attribution disclosure is significantly associated with *Firm size*, *Gear*, *Profit*, and *Issue*. Hence Hypotheses H5b(ii), H7b(ii), H8a, are supported. Although *Issue* is negative and significant, the hypotheses suggested a positive association, thus H10a and H10b(i) are not supported. For the remaining firm-specific characteristics, performance change from the previous year and analyst following, no evidence was found that they influence attribution disclosure, thus Hypotheses H6 and H9 were not supported.

Larger firms' attribution statements to external reasons are less extensive. It is possible that, as larger firms tend to be followed by more analysts, details might be given to them in private meetings, thus reducing the need for public disclosure. Moreover, larger firms might be less vulnerable to external influences on performance, thus blame the environment less. Higher geared firms elaborate less in their narrative sections on external attributions for performance. This might be seen as an attempt at trying to downplay the perceived riskiness of high gearing, by demonstrating to the market that management itself is in control of the firm's course, not external events out of their control. Firms which are more profitable give less space in their narrative sections for attribution statements. This suggests that profitable firms may disclose less detailed explanations for their performance as they do not want to provide information that might help competitors. Firms that issue equity in the following year provide less detailed attributions in their narrative sections. It is possible that if these firms increase their overall disclosure prior to issuing equity, the proportion of wordcount for performance explanations decreases as a result of the increase in total wordcount of the narrative sections.

Three additional analyses were carried out that tested the association between attribution disclosure and different measures of audit committee expertise and firm size, as well as the association between attribution statement disclosure and industry

membership of the sample firms. The results and the conclusions remain on the whole unchanged.

Having investigated the determinants of attribution statement provision in this chapter, the next chapter reports on the results of the regression analysis of the effect of attribution statements on the cost of equity capital.

CHAPTER 8

COST OF EQUITY CAPITAL AND ATTRIBUTIONS

8.1 Introduction

One of the key objectives of this thesis was formulated as to examine whether attribution statements provided in annual reports affect the cost of equity capital. As noted in chapter 4, there is a broad consensus in the theoretical literature that information asymmetry between the firm and the capital market can be overcome by disclosing information, and that this action may have beneficial effects for the firm's cost of equity capital. Although several empirical studies have examined the cost of capital effects of different disclosure types, there is very scarce literature investigating the cost of capital effects of attribution statements. Chapter 4 presented the theoretical framework to explain how information disclosure in general, and causal attributions to corporate financial performance outcomes in particular, can influence the firm's cost of equity capital. Also in chapter 4, hypotheses on the relationship between causal attribution disclosure and the cost of equity capital were discussed. The purpose of the current chapter is to test the hypotheses on the effect of causal attributions on the cost of equity capital.

The chapter is structured as follows: Section 8.2 restates the regression model

as specified in chapter 5. Section 8.3 describes the tests for normality of the data and any data transformations that were carried out prior to further analysis. Section 8.4 presents the results of the multiple regression analysis, and Section 8.5 reports on additional tests that were carried out. The chapter concludes with a summary in Section 8.6.

8.2 Regression model

Chapter 4 specified the hypotheses to be tested in this chapter as follows:

H1a: There is a negative association between causal attribution disclosure and a firm's cost of equity capital.

H1b(i): There is a negative association between external attribution statements and a firm's cost of equity capital.

H1b(ii): There is a negative association between internal attribution statements and a firm's cost of equity capital.

H2: The association between attribution statement disclosure and the cost of equity capital is stronger for firms with lower analyst following.

To test these hypotheses, the basic regression model below was employed.

$$\begin{aligned} CostofCapital &= \beta_0 + \beta_1 Attributions + \beta_2 Beta + \beta_3 Size + \beta_4 Gear \\ &\quad + \beta_5 B/M + \beta_6 AF + \beta_7 Attributions * AF + \epsilon \end{aligned} \tag{8.2.1}$$

Attributions	=	Attribution disclosure, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report
Beta	=	Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market
Size	=	Firm size, measured as market value of equity at financial year end
Gear	=	Gearing ratio, measured as long-term debt divided by long-term debt plus shareholders' equity at fiscal year end
B/M	=	Firm book-to-market ratio, measured as book value of equity divided by market value of equity
AF	=	Analyst following, the number of analysts following a firm
*Attributions*AF*	=	Interaction variable of attribution disclosure and analyst following, operationalised as a multiplication of the attribution disclosure variable and analyst following
β	=	Regression coefficient
ϵ	=	Error term

Similar to chapter 7, the attribution disclosure measure used in this analysis is the wordcount of attributions as a percentage of the total wordcount of the firm's narrative disclosures (*WCN*) as described in chapter 6. A number of regressions were run. First, a reduced form which excluded the interaction term (*Attributions*AF*) was run. Second, the complete model including the interaction term was employed. Subsequently, the attribution variable (*WCN*) is split into internal (*WCN_INT*) and external (*WCN_EXT*) attributions. As for the *WCN* model, first, a reduced form which excluded the interaction term (*Attributions*AF*) was run. Second, the complete model including the interaction term was run. Table 8.2.1 presents a summary of the hypotheses to be tested and the expected sign of the control variables:

Table 8.2.1: Research hypotheses and expected signs control variables

Variable	Predicted Sign
Beta	+
Size	-
Gear	+
B/M	+
AF	-
WCN	-
WCN_INT	-
WCN_EXT	-
*WCN*AF*	+/-
*WCN_INT*AF*	no predction
*WCN_EXT*AF*	no prediction

Beta = Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market. *Size* = Firm size, measured as market value of equity at financial year end in £m. *Gear* = Gearing ratio, measured as long-term debt divided by long-term debt plus shareholders' equity at financial year end. *B/M* = Book-to-market ratio, measured as the ratio of book value of equity to the market value of equity. *AF* = Analyst following, measured as the number analysts following a firm. *WCN* = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. *WCN_INT* = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative sections of the annual report. *WCN_EXT* = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative sections of the annual report. *WCN*AF* = Interaction term expressing an interaction between *WCN* and *AF*. *WCN_INT*AF* = Interaction term expressing an interaction between *WCN_INT* and *AF*. *WCN_EXT*AF* = Interaction term expressing an interaction between *WCN_EXT* and *AF*.

8.3 Normality tests and data transformations

Prior to running the regressions, the data was tested for normality as discussed in chapter 5, section 7.3. As some of the variables were assessed already in chapter 7, the normality assessment in the chapter here focuses on the newly introduced independent variables: beta and book-to-market. If any of these variables significantly violate the normality assumptions, appropriate transformations are made. In order to test for deviations from normality, the Kolmogorov-Smirnov (KS) test was carried out. The test results are provided below in Table 8.3.1.

Table 8.3.1: Normality tests and variable transformations

	Mean	Median	StdDV	Skew.	Kurt.	K-S Lillie fors	K-S Sign.
Panel A: Untransformed variables							
Cost of capital							
CoC	0.098	0.093	0.040	1.500	4.477	0.154	0.000
Disclosure measures							
WCN	0.051	0.045	0.034	1.640	5.264	0.140	0.000
WCN_INT	0.036	0.029	0.026	1.440	2.126	0.139	0.000
WCN_EXT	0.015	0.008	0.019	2.985	14.149	0.219	0.000
Firm characteristics							
Beta	0.972	0.970	0.252	0.474	0.469	0.052	0.200*
Size	1955.944	402.400	4165.979	3.685	15.217	0.320	0.000
AF	7.590	5.000	6.212	0.905	-0.096	0.183	0.000
Gear	0.404	0.415	0.255	0.561	0.918	0.066	0.200*
B/M	0.448	0.370	0.323	1.887	4.955	0.145	0.000
Panel B: Transformed variables							
Cost of capital							
CoC WS95[a]	0.097	0.093	0.032	0.875	0.397	0.131	0.000

CoC = Cost of equity capital. *Beta* = Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market. *Size* = Firm size, measured as market value of equity at financial year end in £m. *AF* = Analyst following, measured as the number of analysts following a firm. *Gear* = Gearing, measured as long-term debt to long-term debt plus equity at financial year end. *B/M* = Firm book-to-market ratio, measured as book value of equity divided market value of equity. *WCN* = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. *WCN_INT* = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative sections of the annual report. *WCN_EXT* = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative sections of the annual report.

*This is a lower bound of the true significance

[a] WS95 = Winsorised at the 95% level.

It can be seen from Table 8.3.1 Panel A that *Beta* and *Gear* are normally distributed and the remaining variables show deviations from a normal distribution. As the firm size measure *(MVE)* and *AF* have already been discussed in chapter 7, the focus now is on discussing *CoC* and *B/M*.[1]

The observation of a non-normal distribution of *CoC* and *B/M* is supported by visual inspection of histograms which show that both variables exhibit positive skewness, and the inspection of QQ-plots shows deviations of the observations from the expected straight line. Moreover, the visual inspection procedure detected the presence of outlying values. Histograms and QQ-plots for *Beta*, *B/M*, and *CoC* are provided in Appendix A.3.9. Based on these findings, the following actions were taken: First, it was decided to transform *CoC* to achieve a more normal distribution and to reduce outlier problems (see Tabachnick and Fidell 2007). While the common approach in the literature is to leave *CoC* untransformed (see e.g. Hail 2002; Gietzmann and Ireland 2005; Francis, Khurana and Pereira 2005; Berger et al. 2006; Francis et al. 2008), the descriptive statistics presented previously in Chapter 6 Table 6.3.1 showed that *CoC* has a number of extremely low estimates at the bottom of the distribution (a minimum value of 1.1%) as well as a maximum of 28.6%. To correct for normality failures and to deal with outliers, some studies recur to winsorising the data (e.g. Lee et al. 2006; Espinosa and Trombetta 2007; Muino and Trombetta 2009). Therefore, *CoC* was winsorised at the 5th and 95th percentile.[2]

Panel B of Table 8.3.1 presents the *CoC* after winsorising. Consistent with previous other studies (see Daske 2006; Hail and Leuz 2006; Kothari et al. 2009; Muino and Trombetta 2009; Dhaliwal et al. 2011), *B/M* was left untransformed. Following Botosan (1997) and Richardson and Welker (2001), to measure analyst following a dummy variable was created that takes the value of 1 if a firm's analyst following is lower than or equal to the median number of analyst following of the sample firms, and 0 if analyst following is higher than the median. The remaining variables of the

[1]Refer to chapter 7, section 3 and section 6, and Appendix A.3.1 for a discussion of *MVE* and *AF*.

[2]Other studies (e.g.Lee et al. 2006 and Muino and Trombetta 2009) winsorise at the 1st and 99th percentile. However, that level does not offer much improvement in this study (results not reported).

regression model were adopted in the transformations from the previous chapter 7 (Log for *MVE* and *AF* untransformed).

8.4 Multiple regression analysis

Multiple regression analysis is based on a number of assumptions to ensure valid results. These assumptions have been discussed in chapter 5, section 7.3, and include normality, linearity, homoscedasticity, and independence of error terms. Additionally, multicollinearity of the data and the existence of influential data points has to be ruled out. To test whether these assumptions were met, a number of methods were used (Pearson correlation, Variance Inflation Factor (VIF), Cook's distance, Durbin-Watson). Multicollinearity between the independent variables was assessed by means of the correlation matrix presented in Table 8.4.1.

As can be seen from the table, the results show that the aggregate attribution disclosure (*WCN*) shows as expected high multicollinearity with *WCN_INT*, and *WCN_EXT*. With regard to the correlations between the independent variables, except for the correlations between firm size (*Size*) and analyst following (*AF*), all of the correlations are below the cut-off limit of 0.8 to 0.9 suggested in the literature above which multicollinearity is considered a problem (see Gujarati 2003; Field 2009). The high correlation between analyst following and firm size (0.873) however requires that analyst following and firm size are not used in the same regression model in order to avoid multicollinearity problems. An examination of the Variance Inflation Factor (VIF) included in the regression statistics reported in the next section shows that none of the values comes close to or exceeds the value of 10 suggested as a limit for VIF (Stevens 2002; Gujarati 2003). Hence multicollinearity is not considered a major problem. In order to assess whether any observations have undue influence on the regression results, Cook's distance was used. There are no influential data points that might influence the results as all values are below the limit of 1 (Cook and Weisberg 1982). Additionally, to ascertain that the regression residuals are independent from each other and there is no correlation, the Durbin-Watson test (DW) was employed.

Table 8.4.1: Correlation Matrix independent variables (Pearson)

	WCN	*WCN_INT*	*WCN_EXT*	*Beta*	*Size*	*AF*	*Gear*	*B/M*
WCN	1							
WCN_INT	0.871***	1						
WCN_EXT	0.584***	0.194**	1					
Beta	-0.031	0.017	-0.026	1				
Size	-0.294***	-0.225***	-0.371***	-0.027	1			
AF	-0.281***	-0.244***	-0.314***	0.028	0.873***	1		
Gear	-0.059	-0.107	-0.223**	-0.038	0.324***	0.343***	1	
B/M	0.145*	0.058	0.261***	-0.114	-0.408***	-0.283***	-0.225***	1

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed); * Correlation significant at the 0.10 level (2-tailed)

WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. *WCN_INT* = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative sections of the annual report. *WCN_EXT* = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative sections of the annual report. *Beta* = Firm beta. *Size* = Firm market value of equity at financial year end in £m. *AF = Number of analysts following a firm*. *Gear* = Gearing, measured as long-term debt to long-term debt plus equity. *B/M* = Firm book-to-market ratio, measured as book value of equity divided market value of equity.

The DW statistics of around the value of 2 demonstrate independence of the error terms (test statistics for both tests are provided in Appendix A.4.3).

8.4.1 Multiple regression results

This section presents the results from the multiple regression analysis. Two main separate regression analyses are undertaken. The first analysis, of which the results are reported in Table 8.4.2, regresses the aggregate attribution measure (*WCN*) against the cost of capital estimates. In the second analysis, the aggregate attribution measure is replaced by the internal and external attribution measure (*WCN_INT* and *WCN_EXT*), introduced as separate variables (see Table 8.4.3). A number of regression models were run to explore the hypotheses. In Table 8.4.2, Model 1 explores Hypothesis 1 and includes the aggregate attribution measure (*WCN*) and the five control variables that previous literature has shown to be associated with the cost of capital (e.g. Fama and French 1992; Botosan 1997; Richardson and Welker 2001; Hail 2002; Espinosa and Trombetta 2007). The model is run separately with either firm size (*MVE*) or analyst following (*AF*) due to the high correlation of these variables. In Model 2, the interaction term of attributions with low analyst following (*WCN*AF*) is included following Botosan (1997) and Richardson and Welker (2001), to test Hypothesis 2.

The results in Table 8.4.2 show that the Adjusted R^2 ranges from 12.1 (Model 1 using *AF*) to 13.9 (Model 2) with F-values between 4.874 (Model 2) and 5.533 (Model 1 using *Size*) which are significant at the 1% level or better. The significance at $p<0.01$ suggests that the models have significant power to explain cross-sectional variation in the sample firm's cost of equity capital. In terms of the control variables all except one show the expected sign and significance. The results show that *Beta* is positively related to the cost of capital at the 10% level or better. *MVE* is negatively related to the cost of capital at the 1% level or better, and *AF* (low analyst following) is positively related to the cost of capital at the 1% level or better. *B/M* is positively related to the cost of capital at the 10% level or better. Although *Gear* has the expected positive sign, it is insignificant.

Table 8.4.2: Multiple regression results for the effect of attribution disclosure (*WCN*) on the cost of equity capital

Variable	Model 1			Model 2	
	Size	*AF*	VIF	*AF*	VIF
Constant	6.105***	4.501***		4.428***	
Beta	1.679*	1.876*	1.023	1.927*	1.018
Size	-3.128***	-	1.390	-	-
AF	-	2.691***	1.346	2.749***	1.225
Gear	0.733	0.659	1.135	0.519	1.150
B/M	1.792*	2.563**	1.240	2.656***	1.121
WCN	0.982	1.142	1.122	-0.798	2.707
*WCN*AF*	-	-	-	1.977*	2.594
Adj. R2	13.6	12.1		13.9	
F-value	5.533	4.963		4.874	
SE	0.030	0.030		0.030	
Sign.	0.000	0.000		0.000	
N	142	142		142	

***Correlation significant at the 0.01 level (2-tailed); **Correlation significant at the 0.05 level (2-tailed); *Correlation significant at the 0.10 level (2-tailed)

VIF = Variance inflation factor; Constant = Regression constant

Adj. R2 = Explanatory power of the regression model for variance in *WCN*. F-value = Indicator for statistical significance of the regression model. SE = Standard Error. Sign. = Significance level for the predictive ability of the regression model. *Beta* = Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market. *Size* = Firm size, measured as market value of equity at financial year end in £m. *Gear* = Gearing ratio, measured as long-term debt to long-term debt plus equity at financial year end. *B/M* = Book-to-market ratio, measured as the ratio of book value of equity to the market value of equity. *AF* = Analyst following, measured as the number of analysts following a firm. *WCN* = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. *WCN*AF* = Interaction term expressing an interaction between *WCN* and *AF*.

Regarding the disclosure measures, the results in Model 1 and 2 show that *WCN* is not significant. Hence Hypothesis H1a of a negative association between attribution statements and the cost of capital is not supported. The coefficient for *WCN* is positive, suggesting that firms that provide more detailed performance explanations have a higher cost of capital. However, the introduction of the interaction with analyst following in Model 2 shows that the interaction term itself is significant at the 10% level or better. Therefore hypothesis H2 is mildly supported. The result is consistent with Botosan (1997) and Richardson and Welker (2001).

In addition to the regression of the aggregate attribution measure and the cost of capital, the analysis is also undertaken by replacing aggregate attribution disclosure with the internal and external attribution disclosure measure (*WCN_INT* and *WCN_EXT*). The results are reported in Table 8.4.3.

Table 8.4.3: Multiple regression results for the effect of attribution disclosure (*WCN_INT* and *WCN_EXT*) on the cost of equity capital

Variable	Model 1			Model 2	
	Size	AF	VIF	AF	VIF
Constant	5.699***	3.981***		4.059***	
Beta	1.254	1.454	1.017	1.375	1.045
Size	-2.993***	-	1.432	-	-
AF	-	2.469**	1.377	2.331**	1.275
Gear	0.385	0.328	1.181	0.026	1.224
B/M	1.701*	2.316**	1.314	2.321**	1.219
WCN_INT	0.240	0.335	1.084	-1.154	2.316
WCN_EXT	-0.570	-0.346	1.187	0.009	2.112
*WCN_INT*AF*	-	-	-	1.940*	2.181
*WCN_EXT*AF*	-	-	-	-0.086	1.974
Adj. R2	11.6	9.4		10.8	
F-value	3.469	2.943		2.719	
SE	0.031	0.031		0.031	
Sign.	0.004	0.012		0.009	
N	111	111		111	

***Correlation significant at the 0.01 level (2-tailed); **Correlation significant at the 0.05 level (2-tailed); *Correlation significant at the 0.10 level (2-tailed)

VIF = Variance inflation factor; Constant = Regression constant

Adj. R2 = Explanatory power of the regression model for variance in *WCN*. F-value = Indicator for statistical significance of the regression model. SE = Standard Error. Sign. = Significance level for the predictive ability of the regression model. *Beta* = Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market. *Size* = Firm size, measured as market value of equity at financial year end in £m. *Gear* = Gearing ratio, measured as long-term debt to long-term debt plus equity at financial year end. *B/M* = Book-to-market ratio, measured as the ratio of book value of equity to the market value of equity. *AF* = Analyst following, measured as the number of analysts following a firm. *WCN_INT* = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative sections of the annual report. *WCN_EXT* = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative sections of the annual report. *WCN_INT*AF* = Interaction term expressing an interaction between *WCN_INT* and *AF*. *WCN_EXT*AF* = Interaction term expressing an interaction between *WCN_EXT* and *AF*.

The analyses are based on a reduced sample of 111 observations because only firms were included that provided both internal and external attributions. In other words, some firms only attributed performance outcomes to internal factors whilst other firms only used external factors. The reduced sample of 111 firms are those that provided both internal and external attributions. As can be seen from the table,

the Adjusted R^2 ranges from 9.4 (Model 1 using *AF*) to 11.6 (Model 1 using *Size*) with F-values between 2.719 (Model 2) and 3.469 (Model 1 using *Size*). The models are significant at the 1% level (5% level for Model 1 using *AF*), which suggests that the models have significant power to explain cross-sectional variation in the sample firm's cost of equity capital.

In terms of significant variables, the control variables are less significant compared to the levels found in the *WCN* models. *Beta* is insignificant in all models. Consistent with the *WCN* models, however, *MVE* is negative at the 1% level or better, and *AF* is positive at the 5% level or better. *B/M* is also positive at the 10% level or better. With regard to the disclosure measure, similar to the *WCN* models, the results indicate that *WCN_INT* and *WCN_EXT* are not significant. Hence Hypotheses H1b(i) and H1b(ii) are not supported. The interaction term of internal attributions with analyst following (*WCN_INT*AF*) is significant at the 10% level but it is not significant for *WCN_EXT*. Hence hypothesis 2 is supported. A summary of the regression results against the hypotheses and the expected signs for the control variables is provided in Table 8.4.4.

Table 8.4.4: Summary of multiple regression results against hypotheses

CoC					
	Sign Pred.	Sign Obs & Signif.		Sign Obs & Signif.	
		WCN		***WCN_INT/WCN/EXT***	
Model		Size	AF	Size	AF
Beta	+	+*	+*	+	+
Size	-	-***		-***	
Gear	+	+	+	+	+
B/M	+	+*	+***	+*	+**
AF[a]	-		+***		+**
WCN	-	+	-/+		
WCN_INT	-			+	+/-
WCN_EXT	-			-	-/+
*WCN*AF*	+/-		+*		
*WCN_INT*AF*	no prediction				+*
*WCN_EXT*AF*	no prediction				-

*** Correlation significant at the 0.01 level (2-tailed)

** Correlation significant at the 0.05 level (2-tailed)

* Correlation significant at the 0.10 level (2-tailed)

Sign Pred. = Sign of the association predicted

Sign Obs. & Signif. = Sign of the association observed & Significance level

[a] A negative association between analyst following and the cost of capital is expected. In the empirical analysis, analyst following is entered in the regression models as a dummy variable taking the value of 1 (0) if analyst following is lower than or equal to the median number of analysts following the sample firms. The positive association found empirically shows a positive association between low analyst following and the cost of capital, which is consistent with the theoretical prediction.

Beta = Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market. *Size* = Firm size, measured as market value of equity at financial year end in £m. *Gear* = Gearing ratio, measured as long-term debt to long-term debt plus equity at financial year end. *B/M* = Book-to-market ratio, measured as the ratio of book value of equity to the market value of equity. *AF* = Analyst following, measured as the number of analysts following a firm. *WCN* = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. *WCN_INT* = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative sections of the annual report. *WCN_EXT* = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative sections of the annual report. *WCN*AF* = Interaction term expressing an interaction between *WCN* and *AF*. *WCN_INT*AF* = Interaction term expressing an interaction between *WCN_INT* and *AF*. *WCN_EXT*AF* = Interaction term expressing an interaction between *WCN_EXT* and *AF*.

8.4.2 Discussion of the regression results

This section presents a detailed discussion of the results from the multiple regression analysis. The aggregate wordcount measure (*WCN*) is discussed first.

With regard to the control variables, beta consistently shows the hypothesised positive sign and is always significant at $p<0.10$. This is consistent with theoretical predictions and empirical evidence (e.g. Fabozzi and Modigliani 2003; Botosan 1997; Hail 2002; Botosan and Plumlee 2002; Poshakwale and Courtis 2005). The finding suggests that firms with higher beta, that is a higher sensitivity of their returns to variation in the return of the overall market (Fama and French 2004), have a higher cost of equity capital as investors want to be compensated for that higher risk with a higher return (Fabozzi and Modigliani 2003). As hypothesised, firm size has a negative association with the cost of equity capital and is significant at $p<0.01$. This suggests that larger firms have a lower cost of equity capital, and is consistent with prior research findings (e.g. Botosan 1997; Hail 2002; Botosan and Plumlee 2002; Poshakwale and Courtis 2005; Francis, Khurana and Pereira 2005; Daske et al. 2006; Espinosa and Trombetta 2007). That supports the notion put forward in the literature (e.g. Gebhardt et al. 2001; Daske et al. 2006; Espinosa and Trombetta 2007) that because more information is available for larger firms, information asymmetry may be lower and investors may therefore perceive larger firms as less risky and require a lower risk premium.

In respect of analyst following, the coefficient is significant and positive ($p<0.01$). As analyst following is entered as a dummy variable that takes the value of 1 (0) for firms with low (high) analyst following, the positive association indicates that firms with low analyst following have a higher cost of equity capital. This is consistent with expectations and with the results by prior research that has repeatedly reported a negative association of analyst following with the implied cost of equity capital (e.g. Gebhardt et al. 2001; Richardson and Welker 2001; Daske et al. 2006). The literature (e.g. Gebhardt et al. 2001; Daske et al. 2006) suggests that, as more information is available for firms with higher analyst following, this might lower information asymmetry and reduce the required rate of return. Gearing is insignificant in all models, suggesting that a firm's gearing level is unrelated to the cost of capital. This is inconsistent with previous research (e.g. Hail 2002; Gietzmann and Ireland 2005; Espinosa and Trombetta 2007) that reported significant positive results. The

difference to those results may stem from differences in measuring gearing. While this study measures gearing as long-term debt to long-term debt plus equity, those studies have tended to use debt-to-market value of equity to measure leverage. The coefficient, however, is positive as expected, and this positive relationship between gearing and the cost of equity capital is consistent with previous studies' findings (e.g. Hail 2002; Gietzmann and Ireland 2005; Espinosa and Trombetta 2007). It suggests that investors require a higher return from investing in firms with higher gearing, since default risk increases with gearing level and therefore the risk to stockholders' investment (Fama and Miller 1972). The book-to-market ratio (*B/M*) has a consistent positive association with the cost of equity capital as expected and is always significant, with a range from $p<0.01$ to $p<0.10$. This is in line with findings by previous research (e.g. Gebhardt et al. 2001; Francis et al. 2004; Botosan and Plumlee 2005; Daske et al. 2006; Hail and Leuz 2006). The finding suggests that firms with a higher ratio of book value of equity to market value of equity have a higher cost of equity capital. An explanation for the positive association may be that the B/M ratio reflects common risk factors which are unobservable (Fama and French 1992), hence high B/M firms would reflect a higher underlying risk of the stock, leading to higher expected returns (La Porta 1996; Gebhardt et al. 2001). Alternatively, it is possible that the B/M ratio captures the effect of stock mispricing (see e.g Lakonishok et al. 1994; La Porta 1996; Daske et al. 2006), with stocks with high B/M ('value stocks') being priced too low and low B/M stocks ('growth stocks') priced too high. Overall, the control variables show the expected associations with the cost of equity capital, with the only difference between the models being the level of significance of the association of each variable.

Turning to the main issues of the thesis, the results in Model 1 show that *WCN* is insignificant, suggesting that the cost of equity capital is not influenced by how extensive firms explain their performance outcomes in the narrative sections of their annual reports. Thus Hypothesis H1a of a negative association between attribution statements and the cost of capital is not supported using this attribution measure. The sign of the coefficient, however, is positive, which suggests that firms that elab-

orate more on explaining their performance outcomes may actually face a higher cost of equity capital. Botosan and Plumlee (2002) also reported a positive association of timely disclosures with the cost of equity capital.

A possible explanation for the insignificant result is that the market might see explanations for performance outcomes provided by management as 'cheap talk', that is costless, non-binding and non-verifiable messages, and therefore ignore them in their assessment of firm performance (see e.g. Bhattacharya and Krishnan 1999; Farrell 1995; Farrell and Rabin 1996; Forsythe et al. 1999). For a message to have an effect on the receiver's behaviour, the incentives of the sender and the receiver of the message have to be closely aligned, otherwise the information is considered 'cheap talk' and ignored (Farrell 1995; Forsythe et al. 1999). Whether the incentives between management and investors are aligned is doubtful (Forsythe et al. 1999; Barton and Mercer 2005). This applies in particular to explanations for corporate performance outcomes, which may be used by management in a way as to manage and manipulate outsider's impressions and to present the firm and its performance in a better light (Aerts 2005; Merkl-Davies et al. 2007). For example, managers have incentives to portray firm performance in a positive light, that is to claim successful outcomes for themselves or to downplay negative outcomes for reasons such as their job security, reputation and pay (Clatworthy and Jones 2003; Baginski et al. 2004), or to keep investors satisfied and support stock price (Salancik and Meindl 1984; Abrahamson and Amir 1996). Investors, aware of such potential incentives may, as a consequence, question the value and thus the usefulness of management's attribution statements for their own decision making. Research suggests that if investors doubt the credibility and believability of disclosures, they will consider it 'cheap talk' and ignore the information (see e.g. Bhattacharya and Krishnan 1999; Forsythe et al. 1999). This suggestion is supported by empirical findings by Kothari et al. (2009). Kothari et al. (2009) failed to find an association between management's information disclosures in the MD&A section and the cost of capital, and suggested that, given management's incentives to present the firm's performance in a self-serving way, investors may not see this information as credible and therefore ignore it. This suggests that, if investors

feel that they cannot believe the attribution statements and therefore consider them 'cheap talk', they will disregard the explanations. So instead of being useful information for investors in their assessment of firm value, management's performance attributions might be considered useless and ignored. This might explain the finding in this study that attribution statements in the annual report are unrelated to the cost of capital.

Another possible explanation for the insignificant result might be that investors already knew the reasons behind performance outcomes from other sources prior to the publication of the attribution statements in the annual report. That is, this information was already incorporated into investors' decision models and forecasts, so that when the annual report was published some time after the financial year end, the information was no longer new to the market. As markets react to new information when it becomes available (Rippington and Taffler 1995; MacKinlay 1997), it is possible that the valuation implications of performance attributions may have already occurred, so that their information content is already incorporated in price. Kothari et al. (2009) also suggest that limited timeliness of MD&A information may explain their finding that management's disclosures in the MD&A sections are not associated with the cost of capital.

To analyse hypothesis 2 on the mitigating effect of analyst following on the relationship between attribution statements and the cost of capital, Model 2 includes an interaction variable that expresses an interaction of attribution disclosure with low analyst following (*WCN*AF*). Following Botosan (1997) and Richardson and Welker (2001), to measure analyst following a dummy variable was created that takes the value of 1 if a firm's analyst following is lower than or equal to the median number of analysts following the sample firms, and 0 if analyst following is higher than the median. This categorical variable is then interacted with the attribution disclosure measure and the resulting interaction term is added to the regression model. The results are shown in Table 8.4.2.

As for the control variables, the signs of the coefficients and the levels of significance are consistent with the values in Model 1, thus will not be repeated here.

The only slight difference is *B/M* which is now significant positive at the 1% level as compared to the 5% level in Model 1. The results suggest that for firms with high analyst following, the cost of capital is higher if firms have a higher beta and higher book-to-market ratio, while gearing has no effect.

With regard to the attribution measure, (*WCN*) is insignificant, suggesting that for firms with high analyst following, attribution statements do not influence the cost of equity capital. This is also consistent with the findings in Model 1. The interaction term (*WCN*AF*), however, is positive and significant at the 10% level. This suggests that firms with low analyst following that provide more extensive performance explanations have a higher cost of equity capital. Thus Hypothesis 2, which suggested that the association between attribution statement disclosure and the cost of equity capital is stronger for firms with lower analyst following, is mildly supported.

A possible explanation for the significant association is given by Kothari et al. (2009) who argue that for firms about which not much information is available, any disclosures that can shed more light on the risks attached to the business and reduce uncertainty among investors regarding the firm will affect investors' assessment of the firm. Botosan (1997) also suggests that corporate disclosures in disclosure venues such as the annual report become more important to investors for firms with low analyst following. This suggests that for firms with low analyst following, investors will need to rely more on management's performance explanations in the annual report to look for information about the reasons behind performance outcomes, and to incorporate these into their decision making, since analysts' assessments are not as easily available. Hence it is possible that for firms with low analyst following, performance explanations might not necessarily be considered 'cheap talk' and disregarded and investors might be more inclined to consider management's performance explanations, as there is less other information available on which investors can base their decisions. As Table 8.4.2 shows, for firms with high analyst following, attribution statements (*WCN*) are not related to the cost of equity capital. This suggests that for these firms there is less need for investors to rely on the explanations provided by management in the annual report, as analysts may already be providing an assessment of

performance. As a consequence, investors can use analysts' information rather than firm-provided attribution statements to understand the reasons for performance, so that management's explanations in the annual report would be less important for investors' decision processes. This may explain why there is a significant association between the cost of equity capital and attribution statements for firms with low analyst following, but not for those followed by a larger number of analysts.

In terms of the positive sign of the coefficient, the finding suggests that firms with low analyst following that provide more extensive attribution statements face a higher cost of equity capital. This result might be explained with the findings by Barton and Mercer (2005) who provided evidence that implausible, thus not credible, performance explanations by management are not ignored by analysts but instead are used to make negative inferences about management and the firm's prospects. Their study found that implausible performance explanations result in lower earnings forecasts and lower firm valuations than if no explanations were given. This suggests that attribution statements that lack credibility are not necessarily ignored but can actually increase the risk investors attach to investing in the firm (Barton and Mercer 2005), and lead to a higher cost of capital. Barton and Mercer (2005) suggest that implausible explanations harm management's reputation, which impacts its credibility in communicating with the capital market. This, in turn, would affect a firm's information risk and ultimately negatively influence its cost of capital. Similarly, Kimbrough and Wang (2009) show that investors use the current performance reported by industry peer firms and the commonality of the firm's earnings with industry earnings and the overall market to judge the plausibility of attribution statements in earnings announcements. Kimbrough and Wang (2009) show that the stock price reaction to explanations for good and bad outcomes then varies accordingly. It can be argued that implausible or not credible performance explanations may lead investors to become more suspicious and cautious, thinking about why management might provide such seemingly not credible disclosures. Investors therefore may become less optimistic about a firm's prospects and require a higher return. In addition, providing more detailed information about the reasons that have influenced a performance

outcome may point to factors and issues that either raise investors' doubts about the sustainability of the achieved good performance, or point to potentially continuing bad performance. That is, factors that suggest that the future might be less bright for the firm. This may lead investors to revise the firm's earnings potential downward and to require a higher rate of return, which would explain a positive association with attribution statements.

The finding that an interaction effect of attribution statements with analyst following influences the relationship between disclosure on the cost of capital is in line with and adds to the growing body of research that shows that disclosure interacts with other factors to exercise a combined effect on the cost of equity capital, for instance with financial performance (Richardson and Welker 2001), accounting policy (Espinosa and Trombetta 2007), or superior disclosure performance relative to peer firms (Dhaliwal et al. 2011).

Having discussed the aggregate wordcount measure (*WCN*), the focus is now on the models that explore the relationship between the cost of capital and internal and external attribution statements (*WCN_INT/WCN_EXT*). The results are presented in Table 8.4.3.

For Model 1, the results for the control variables are similar to those in the aggregate *WCN* models, but generally less significant, with the exception of beta. Different from the aggregate *WCN* models beta is, although positive, insignificant, which suggests that a firm's beta is not related to the cost of capital. This finding is in line with the mixed results by a number of previous studies that also found beta to be insignificant (Gietzmann and Ireland 2005; Espinosa and Trombetta 2007), or to have an inconsistent and unstable association with the cost of capital (Gebhardt et al. 2001; Muino and Trombetta 2009). Firm size is negative and significant at the 1% level in line with the *WCN* models, suggesting that larger firms have a lower cost of capital. The significant positive association between low analyst following and the cost of capital is also consistent with the results in the *WCN* model, suggesting that firms followed by fewer analysts face a higher cost of capital. Gearing is insignificant, which suggests that a firm's gearing level does not affect its cost of capital, consistent

with the aggregate attribution measure (*WCN*) models. The book-to-market ratio (*B/M*) is positive and significant at p<0.10 (in the firm size model) and p<0.05 when analyst following is used, in line with the *WCN* models.

Regarding the attribution disclosure measures, the results in Model 1 show that, consistent with the aggregate attribution measure (*WCN*), neither *WCN_INT* nor *WCN_ EXT* have a significant association with the cost of equity capital. Hence Hypotheses H1b(i) and H1b(ii), that internal and external attributions have a different effect on the cost of capital, are not supported. The result suggests that investors consider neither internal performance explanations nor external performance explanations as value relevant. In the context of biased attributions (Staw et al. 1983; Huff and Schwenk 1990) and uninformative disclosures (Forsythe et al. 1999), it is possible that investors consider internal explanations as uninformative 'cheap talk' because, as Baginski et al. (2004) point out, explanations that give firm-internal reasons are not easy to verify. Since the literature (e.g. Bhattacharya and Krishnan 1999) suggests that investors might disregard information that is difficult to verify, this might explain why attributions to internal reasons are unrelated to the cost of capital. Further, given the tendency by managers to use external attributions to blame external factors for bad performance in order to deny responsibility and to make the firm and management appear in a better light (e.g. Staw et al. 1983; Bettman and Weitz 1983; Aerts 2005), external attributions may also be considered not reliable and therefore disregarded in decision making. Moreover, as Kimbrough and Wang (2009) suggest, even if it was possible to observe and verify the external reasons given (e.g. overall state of the economy), it might be difficult for investors to judge whether this really impacted on performance, and to assess the degree of influence that is claimed by management. Investors might anticipate that management will tend to praise themselves for good outcomes or blame external factors for bad outcomes, thus not pay much attention to whether internal or external explanations are given. Investors therefore might not be willing to incorporate potentially biased information into their decision processes and use it to evaluate performance and assess firm value. This suggests that investors might consider both internal and external performance explanations as information

that is uninformative and not useful for firm valuation.

Turning to the interaction between the internal and external attribution measures with the level of analyst following (*WCN_INT*AF* and *WCN_EXT*AF*) in Model 2, the interaction term *WCN_INT*AF* is positive and significant at the 10% level, whereas *WCN_EXT*AF* is insignificant. This provides support for hypothesis 2 that the association between attribution statements and the cost of capital is stronger for firms with lower analyst following. It also provides support for hypothesis H1b(ii) that internal attribution statements have their own distinct effect on the cost of equity capital.

The finding suggests that for firms with low analyst following, those firms that elaborate more on internal reasons for performance tend to have a higher cost of equity capital, whereas elaborating more on external causes for performance does not influence the cost of equity capital. This suggests that although investors in general might consider internal explanations to be difficult to verify and therefore see them as 'cheap talk' and ignore them, as the results from Model 1 show, for firms with low analyst following investors might be more inclined to consider management's performance explanations, as there is less other information available on which investors can base their decisions. This suggests that for firms with low analyst following, performance explanations to internal reasons might not necessarily be considered 'cheap talk' and disregarded by investors.

It can be argued that when performance is explained with internal reasons, these internal factors can offer exactly the type of information investors are looking for, for example insight into internal operational processes, resources, or the effectiveness of implementing strategic plans. For firms with low analyst following, this type of information might be difficult to obtain from sources other than the annual report. More detailed internal explanations can give investors firm-specific insight into the value creation processes and if the firm is able to use its resources and processes properly to create value for the investor. Internal reasons also allow a direct assessment of the results against the resources available, how well the firm has used these resources to produce results and how well it is managed. Moreover, internal

attributions might reveal proprietary information, which would be of high interest to analysts and investors and aid in their firm evaluation (see Baginski et al. 2004). This is particularly the case for firms with low analyst following, where other information sources are limited. The results also show that external attributions are unrelated to a firm's cost of capital, potentially because they can apply to any firm without much improving an investors' insight needed for assessing a specific firm's operations and prospects. Attributions to external causes consist more of factors that the firm cannot control, such as competition or the economy and these can apply to every firm, thus no firm-specific information is gleaned.

With regard to the positive sign of the association which indicates that more detailed internal attributions are related to a higher cost of capital, this can be explained in a way similar to the findings for aggregate attribution statements (*WCN*). Although investors may see information that sheds light on internal procedures and success factors as potentially valuable and useful, this does not mean that the information will automatically have a positive influence on investors' perception of the firm. As discussed above, it is possible that these explanations contain information that investors do not see as beneficial. For example, if these explanations indicate that positive factors underlying good performance are not going to continue, or if explanations point to internal factors of which investors think that they may develop a negative effect in the future. This may raise investors' doubts about the firm's future performance and its risk, and cause them to revise down their outlook for the firm, hence to require a higher return.

Furthermore, it is also possible that investors see internal explanations as lacking credibility since internal reasons are difficult to verify (Baginski et al. 2004). In this case, as the findings by Barton and Mercer (2005) suggest, if internal attributions are seen as lacking credibility or plausibility, investors may infer a higher risk and a higher cost of capital. This may explain the finding of a positive association between internal performance explanations and the cost of equity capital.

8.5 Additional analysis

In addition to the analysis discussed above, three more tests were carried out to investigate the robustness of the results. This section presents the results. In the first analysis, the normal score transformed attribution disclosure measures (*WCN*, *WCN_INT* and *WCN_EXT*) are replaced by attribution measures transformed using the fractional rank. A number of previous studies (e.g. Botosan 1997; Botosan and Plumlee 2002; Hail 2002) have used fractional rank transformation of their disclosure measure in the analysis of the effect on the cost of capital. The results are presented in Table 8.5.1.

The *WCN* model is discussed first. For Model 1, Table 8.5.1 shows that the signs of the correlation and the significance levels of all variables are unchanged from the main model. In terms of the control variables, beta is positive and significant at $p<0.10$ and firm size is negative and significant at $p<0.01$. Low analyst following is positive and significant at $p<0.01$, and book-to-market is positive and significant at $p<0.10$ (firm size model) and $p<0.05$ (analyst following model). Gearing is insignificant. Also consistent with the main model, the attribution disclosure measure *WCN* is insignificant. The results for Model 2 are also consistent with the main model in terms of signs of the correlation and significance levels. In terms of the control variables, beta is positive and significant at $p<0.10$, low analyst following is positive and significant at $p<0.01$, and book-to-market is positive and significant at $p<0.01$. Gearing is insignificant. The attribution disclosure measure *WCN* is insignificant, consistent with the main model. The interaction term (*WCN*AF*) is positive, yet a significance level of 5% is stronger than the 10% found in the main model.

The results for the internal and external attribution measures (*WCN_INT/WCT_EXT*) are also shown in Table 8.5.1. The results for Model 1 are consistent with the main analysis. Of the control variables, firm size is negative and significant at $p<0.01$ and low analyst following is positive and significant at $p<0.01$. Book-to-

Table 8.5.1: Multiple regression results for the effect of attribution disclosure measures (*WCN*, *WCN_INT* and *WCN_EXT*, fractional rank transformation) on the cost of equity capital

	WCN					*WCN_INT*/WCN_EXT				
Variable	*Model 1*			*Model 2*		*Model 1*			*Model 2*	
	Size	*AF*	VIF	*AF*	VIF	*Size*	*AF*	VIF	*AF*	VIF
Constant	5.416***	3.976***		4.457***		5.075***	3.704***		3.996***	
Beta	1.667*	1.860*	1.022	1.963*	1.019	1.273	1.496	1.018	1.405	1.048
Size	-3.118***	-	1.387	-	-	-3.059***	-	1.415	-	-
AF	-	2.663***	1.346	2.690***	1.232	-	2.515***	1.346	2.318**	1.266
Gear	0.741	0.665	1.134	0.593	1.148	0.376	0.319	1.135	0.108	1.223
B/M	1.782*	2.553**	1.240	2.666***	1.123	1.714*	2.341**	1.307	2.327**	1.212
WCN	1.054	1.171	1.100	-0.735	2.374	-	-	-	-	-
*WCN*AF*	-	-	-	2.100**	2.264	-	-	-	-	-
WCN_INT						0.553	0.622	1.083	-0.660	2.159
WCN_EXT						-0.919	-0.670	1.180	-0.257	2.285
*WCN_INT*AF*						-	-	1.240	1.726*	2.011
*WCN_EXT*AF*						-	-	1.122	-0.043	2.127
Adj.R^2	13.7	12.1		14.2		12.1	9.8		10.4	
F-value	5.568	4.978		4.985		3.604	3.045		2.634	
SE	0.030	0.030		0.030		0.031	0.0301		0.031	
Sign.	0.000	0.000		0.000		0.003	0.009		0.011	
N	142	142		142		111	111		111	

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed);

* Correlation significant at the 0.10 level (2-tailed); VIF = Variance inflation factor

Constant = Regression constant

(continued on next page)

Table 8.5.2 continued

Adj. R2 = Explanatory power of the regression model for variance in *WCN*. F-value = Indicator for statistical significance of the regression model. SE = Standard Error. Sign. = Significance level for the predictive ability of the regression model. *Beta* = Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market. *Size* = Firm size, measured as market value of equity at financial year end in £m. *Gear* = Gearing ratio, measured as long-term debt to long-term debt plus equity at financial year end. *B/M* = Book-to-market ratio, measured as the ratio of book value of equity to the market value of equity. *AF* = Analyst following, measured as the number of analysts following a firm. *WCN* = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. *WCN_INT* = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative sections of the annual report. *WCN_EXT* = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative sections of the annual report. *WCN*AF* = Interaction term expressing an interaction between *WCN* and *AF*. *WCN_INT*AF* = Interaction term expressing an interaction between *WCN_INT* and *AF*. *WCN_EXT*AF* = Interaction term expressing an interaction between *WCN_EXT* and *AF*.

market is positive and significant at p<0.10 (firm size model) and p<0.05 (analyst following model). Beta and gearing are insignificant. Also consistent with the main model, the internal and external attribution disclosure measures (*WCN_INT* and *WCN_EXT*) are insignificant. The results for Model 2 are also consistent with the main analysis. Of the control variables, low analyst following is positive and significant at p<0.05 and book-to-market is positive and significant at p<0.05. Beta and gearing are insignificant. Also consistent with the main model, the internal and external attribution disclosure measures (*WCN_INT* and *WCN_EXT*) are insignificant, but the interaction term (*WCN_INT*AF*) is positive and significant at p<0.10. Taken together, the results from using fractional ranks of the attribution disclosure measures instead of the normal score transformed values are consistent with the results from the main analysis, suggesting that the conclusions are unaffected.

The second additional analysis used a different measure of firm size. A firm's market value of equity (*MVE*) was replaced by a firm's total assets (*TA*), which is an alternative measure of firm size also used in the literature (e.g. Francis, LaFond, Olsson and Schipper 2005; Wallace and Naser 1995; Haniffa and Cooke 2005). Due to the multicollinearity problem between firm size and analyst following and the resulting separate models, only Model 1 can be analysed here. The results are provided in Table 8.5.2.

Table 8.5.2: Regression results for the effect of the attribution disclosure measures (*WCN* and *WCN_INT / WCN_EXT*) Model 1 using *Total Assets*

Variable	Model 1		Model 1	
	WCN		*WCN_INT / WCN_EXT*	
	Size (TA)	VIF	*Size (TA)*	VIF
Constant	5.918***	-	5.509***	-
Beta	1.703*	1.023	1.220	1.018
Size (TA)	-2.699***	1.295	-2.607***	1.296
Gear	0.985	1.251	0.661	1.274
B/M	2.862***	1.094	2.617***	1.190
WCN	1.160	1.084	-	-
WCN_INT	-	-	0.406	1.070
WCN_EXT	-	-	-0.423	1.175
Adj. R2	12.1		9.9	
F-value	4.972		3.072	
SE	0.030		0.031	
Sign.	0.000		0.008	
N	142		111	

***Correlation significant at the 0.01 level (2-tailed)

**Correlation significant at the 0.05 level (2-tailed)

*Correlation significant at the 0.10 level (2-tailed)

VIF = Variance inflation factor

Constant = Regression constant

Adj. R2 = Explanatory power of the regression model for variance in *WCN*. F-value = Indicator for statistical significance of the regression model. SE = Standard Error. Sign. = Significance level for the predictive ability of the regression model. *Beta* = Firm beta. *Size* = A firm's total assets at financial year end in £m. *Gear* = Gearing ratio, measured as long-term debt to long-term debt plus equity. *B/M* = Book-to-market ratio, measured as the ratio of book value of equity to the market value of equity. *AF* = Number of analysts following a firm. *WCN* = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. *WCN_INT* = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative sections of the annual report. *WCN_EXT* = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative sections of the annual report.

The results are consistent with the main results using *MVE*. In the model using aggregate attribution disclosure (*WCN*), beta is positive and significant $p<0.10$. *TA* is negative and significant at $p<0.01$, suggesting that larger firms, measured as having more total assets on their balance sheet, have a lower cost of capital. This is consistent with the findings in the main analysis (see Table 8.4.2) that larger firms in terms of market value have a lower cost of capital. This suggests that investors perceive larger firms as less risky, hence require a lower rate of return (Gebhardt et al. 2001;

Espinosa and Trombetta 2007). Book-to-market is also positive and shows a higher significance level (1%) than in the main *MVE* model (10%). Gearing is insignificant. The attribution disclosure measure (*WCN*) is insignificant, which is also consistent with the *MVE* model.

The results for the model using the internal and external attribution measure (*WCN_INT* and *WCN_EXT*) are also consistent with the *MVE* model. *TA* is negative and significant at $p<0.01$, consistent with the findings in the *MVE* model. Book-to-market is also positive, and shows a higher significance level (1%) than in the *MVE* model (10%). Beta and gearing are positive but insignificant. Consistent with the results in the *MVE* model, the internal and external attribution measures (*WCN_INT* and *WCN_EXT*) are insignificant. Taken together, measuring firm size as total assets yields similar results to using market value of equity.

The third additional analysis investigates potential endogeneity problems between the disclosure of performance explanations and the cost of capital. Endogeneity refers to the situation when the error term in a regression is correlated with one or more of the independent variables and this may be caused by, for instance, a correlated omitted variable or unobservable firm characteristics (see e.g. Wooldridge 2003; Nikolaev and Van Lent 2005). In case of endogeneity, the estimators derived from a regression using standard Ordinary Least Squares (OLS) may be inconsistent and biased (Hail 2002; Nikolaev and Van Lent 2005).

A number of studies (e.g. Healy and Palepu 2001; Core 2001; Hail 2002; Larcker and Rusticus 2010) suggest that there might be an endogenous relationship between disclosure and the cost of capital. If companies decide on their disclosure policy based on the costs and benefits of providing more information (including beneficial effects on the cost of capital), then a self-selection bias might influence the association between disclosure and the cost of equity capital (Hail 2002). Companies that choose to provide a higher disclosure level might have different underlying characteristics than companies with a lower disclosure level, so their cost of equity capital could be different irrespective of the chosen disclosure level (see Hail 2002; Nikolaev and Van Lent 2005). Differences in the cost of capital could be correlated with disclosure

level, but not necessarily caused by the level of disclosure (Nikolaev and Van Lent 2005). The consequence for investigations of the association between disclosure and cost of capital is that, in the presence of endogeneity, it is not clear which direction the effect is taking (Hail 2002; Larcker and Rusticus 2010) and the estimators derived from an OLS regression may be inconsistent (Hail 2002; Nikolaev and Van Lent 2005).

To deal with endogeneity problems in regression, the two-stage-least-squares (2SLS) method is a widely used method in the literature (e.g. Wooldridge 2003; Larcker and Rusticus 2010; Aerts and Tarca 2010; Ntim et al. 2012). In the 2SLS method, the endogeneous variable is estimated in a first stage regression as a function of factors that are assumed to determine the variable; then, in the second stage, the predicted values for the endogeneous variable replace the initial values in the regression analysis (Hail 2002; Wooldridge 2003; Ntim et al. 2012). Since using an estimated value for the suspected endogeneous variable increases the variance of the estimator and lowers the ability to make inferences from the estimates (see Greene 1993; Wooldridge 2003; Gujarati 2003), Wooldridge (2003) stresses the importance of making sure whether endogeneity is present and the 2SLS approach is really required.

In order to assess whether endogeneity issues might influence the results of the thesis, and whether the 2SLS technique is appropriate, the Hausman test was carried out (see Hausman 1978; Wooldridge 2003; Gujarati 2003; Beiner et al. 2006; Larcker and Rusticus 2010; Ntim et al. 2012) which tests for the presence of endogeneity. The Hausman procedure investigates whether the coefficient of the residuals obtained from the first-stage regression is significant when included as an explanatory variable in an ordinary least squares (OLS) version of the second-stage regression (Wooldridge 2003; Gujarati 2003; Larcker and Rusticus 2010). The null hypothesis states that there is no endogeneity. If the coefficient of the residuals is significant, the null hypothesis of no endogeneity is rejected, suggesting that estimates derived from an OLS regression may be inconsistent, and a 2SLS method can be applied (Beiner et al. 2006; Larcker and Rusticus 2010). Therefore, as a first step, the Hausman test was carried out to test for the presence of endogeneity between attribution statement disclosure and cost of equity capital, and hence whether the 2SLS technique is appropriate.

The Hausman test consists of two stages. In the first stage, attribution statement disclosure was determined by regressing it on (1) the corporate governance factors and firm-specific characteristics that were used in the model in chapter 7 to determine attribution statement disclosure (See chapter 7, section 2)[3]; and (2) the independent variables contained in the second-stage model (that is, *Beta* and *Book-to-market value* in the Cost of capital model) (see Wooldridge 2003; and Beiner et al. 2006; Larcker and Rusticus 2010; Ntim et al. 2012 for an application of the Hausman test).

The regression model for the first-stage Hausman test to determine attribution disclosure was specified as follows:

$$\begin{aligned} Attributions &= \beta_0 + \beta_1 PropNED + \beta_2 Dirown + \beta_3 ACSize + \beta_4 ACExp \\ &\quad + \beta_5 Size + \beta_6 AF + \beta_7 Gear + \beta_8 Profit + \beta_9 Perf \\ &\quad + \beta_{10} Issue + \beta_{11} Beta + \beta_{12} B/M + \epsilon \end{aligned} \tag{8.5.1}$$

[3]These variables had been identfied in chapter 3 as determinants of attribution statement disclosure and their effect analysed in chapter 7, therefore they can be considered an adequate choice to represent the endogenous variable (see Larcker and Rusticus 2010).

PropNED	=	Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board
Dirown	=	Executive director share ownership, measured as the percentage of shares held by firm executive directors
ACSize	=	Audit committee size, measured as the number of directors on the audit committee
ACExp	=	Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee
Size	=	Firm size, measured as market value of equity at financial year end in £m
AF	=	Analyst following, measured as the number of analysts following a firm
Gear	=	Gearing ratio, measured as long-term debt divided by long-term debt plus shareholders' equity at financial year end
Profit	=	Firm profitability, measured as return on assets
Perf	=	Change in financial performance from the previous financial year, measured as indicator variable taking the value of 1 if the firm's operating profit has decreased from the previous year; 0 otherwise
Issue	=	Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise
Beta	=	Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market
B/M	=	Firm book-to-market ratio, measured as book value of equity divided by market value of equity
β	=	Regression coefficient
ϵ	=	Error term

The results from the first-stage regression are reported in Table 8.5.3.

Table 8.5.3: First-stage Hausman test ordinary least squares (OLS) regression results for testing endogeneity between attribution disclosure (*WCN*) and the cost of equity capital: Regression of attribution statement disclosure on corporate governance factors and firm characteristics

	WCN			*WCN_INT*			*WCN_EXT*		
Variable	*Size*	*AF*	VIF	*Size*	*AF*	VIF	*Size*	*AF*	VIF
Constant	1.123	0.352		0.932	0.469		1.555	0.591	
PropNED	1.904*	1.744*	1.250	1.962*	1.987**	1.199	-0.354	-0.776	1.251
Dirown	1.368	1.610	1.623	1.656	1.651	1.470	0.169	0.565	1.600
ACSize	-1.902*	-2.314**	1.507	-2.446**	-2.591**	1.284	0.433	-0.098	1.608
ACExp	0.514	0.499	1.072	0.298	0.262	1.075	-0.059	-0.026	1.091
Size	-1.201		2.470	-0.404		2.434	-1.838*		2.546
AF		-1.188	1.073		0.950	1.532		-1.188	1.599
Gear	0.402	0.465	1.439	-0.206	-0.067	1.469	-1.453	-1.468	1.515
Profit	-1.874*	-1.946*	1.579	-1.671*	-1.592	1.509	-1.170	-1.308	1.563
Perf	-0.240	-0.294	1.170	-0.691	-0.728	1.175	0.851	0.834	1.259
Issue	-2.130**	-2.187**	1.073	-2.140**	-2.099**	1.061	-0.320	-0.530	1.078
Beta	-0.074	0.009	1.058	0.371	0.410	1.060	0.030	0.183	1.046
B/M	-0.141	0.139	1.516	-0.646	0.593	1.405	0.336	0.766	1.598
Adj.R^2	11.2	11.2		8.4	8.9		9.8	8.1	
F-value	2.651	2.648		2.187	2.266		2.135	1.923	
SE	0.913	0.913		0.928	0.925		0.917	0.926	
Sign.	0.04	0.04		0.019	0.015		0.024	0.044	
N	142	142		140	140		113	113	

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed);

* Correlation significant at the 0.10 level (2-tailed); VIF = Variance inflation factor

Constant = Regression constant

(continued on next page)

Table 8.5.3 continued

Adj. R2 = Explanatory power of the regression model for variance in *WCN*. F-value = Indicator for statistical significance of the regression model. SE = Standard Error. Sign. = Significance level for the predictive ability of the regression model. *PropNED = Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board. Dirown = Executive director ownership, measured as the percentage of shares held by executive directors. ACSize = Audit committee size, measured as the number of directors on the audit committee. ACExp = Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee. Size = Firm size, measured as market value of equity at financial year end in £m. AF = Number of analysts following a firm. Gear = Gearing ratio, measured as long-term debt to long-term debt plus equity at financial year end. Profit = Firm profitability, measured as return on assets. Perfchange = Dummy variable, taking the value of 1 if the firm's performance has deteriorated from the previous financial year, measured as the percentage change in return on assets from the previous year; 0 otherwise. AF = Analyst following, measured as the number of analysts following a firm. Issue = Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise. Beta = Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market. B/M = Book-to-market ratio, measured as the ratio of book value of equity to the market value of equity. WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative disclosures of a firm excluding the notes to the financial statements. WCN_INT = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements. WCN_EXT = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements.*

Overall, the results of the first-stage regression are comparable to those reported in chapter 7, section 5, on the determinants of attribution statement disclosure. In the *WCN* model, the results for those variables taken from the model in chapter 7 remain unchanged, except *PropNED*, *ACSize* and *Profit* (in the *AF* model) being less significant (now at the 5% level as compared to previously 10%). *Beta* and *Book-to-market* value are insignificant. The results for the *WCN_INT* model are also broadly unchanged, except for the *MVE* model in which *Profit* becomes significant at the 10% level, while *Dirown* loses significance at the 10% level (but is significant at the 11% level). Also, *Issue* shows an increased significance level (now at the 5% level, up from 10%), while *PropNED* is less significant (now at the 10% level, down from 5%). As in the *WCN* model, *Beta* and *Book-to-market* value are insignificant. The results for *WCN_EXT* are mostly consistent with the analysis in chapter 7, yet also show some slight differences. In the *MVE* model, Size (*MVE*) remains significant at the 10% level, while *Gear* loses significance (from the 10% level previously) in both the *MVE* and *AF* model. All other variables remain unchanged. As for the *WCN* and *WCN_INT* models, *Beta* and *Book-to-market* value are insignificant.

In the second stage of the Hausman test, the residuals obtained from the first-stage regression above were included as an additional explanatory variable in the second-stage regression (that is, in the cost of capital model model as specified in section 8.2). The results are presented in Table 8.5.4 (*WCN* model) and Table 8.5.5 (*WCN_INT/WCN_EXT* model). The *WCN* model is discussed first.

As can be seen from Table 8.5.4, the coefficient of the residuals is insignificant. That is, the Null hypothesis of no endogeneity between attribution statement disclosure and the cost of equity capital cannot be rejected, suggesting that endogeneity between aggregate attribution statement disclosure (*WCN*) and the cost of equity capital is not a major problem in the thesis, and the use of OLS regression is appropriate (see Larcker and Rusticus 2010; Ntim et al. 2012).

The results for the *WCN_INT/EXT* model are reported in Table 8.5.5 below.

Table 8.5.4: Second-stage Hausman test regression results for testing endogeneity between attribution disclosure (*WCN*) and the cost of equity capital

Variable	Model 1			Model 2	
	Size	*AF*	VIF	*AF*	VIF
Constant	5.130***	4.665***		4.501***	
Beta	1.734*	1.939*	1.020	1.965*	1.021
Size	-2.042**	-	2.272	-	-
AF	-	1.716*	1.622	1.759*	1.834
Gear	0.645	0.552	1.152	0.420	1.65
B/M	1.729*	2.188**	1.188	2.373**	1.190
WCN	0.729	0.661	1.221	-0.950	2.820
WCN_Resid	0.642	1.269	1.798	0.843	2.033
*WCN*AF*	-	-	-	1.958*	2.595
Adj. R2	13.2	12.5		13.7	
F-value	4.660	4.422		4.270	
SE	0.030	0.030		0.030	
Sign.	0.000	0.000		0.000	
N	142	142		142	

***Correlation significant at the 0.01 level (2-tailed); **Correlation significant at the 0.05 level (2-tailed); *Correlation significant at the 0.10 level (2-tailed)

VIF = Variance inflation factor; Constant = Regression constant

Adj. R2 = Explanatory power of the regression model for variance in *WCN*. F-value = Indicator for statistical significance of the regression model. SE = Standard Error. Sign. = Significance level for the predictive ability of the regression model. *Beta* = Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market. *Size* = Firm size, measured as market value of equity at financial year end in £m. *Gear* = Gearing ratio, measured as long-term debt to long-term debt plus equity at financial year end. *B/M* = Book-to-market ratio, measured as the ratio of book value of equity to the market value of equity. *AF* = Analyst following, measured as the number of analysts following a firm. *WCN* = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. *WCN_Resid.* = Residuals obtained from the first-stage regression of the Hausman test. *WCN*AF* = Interaction term expressing an interaction between *WCN* and *AF*.

Table 8.5.5: Second-stage Hausman test regression results for testing endogeneity between attribution disclosure (*WCN_INT/EXT*) and the cost of equity capital

Variable	Model 1			Model 2	
	Size	AF	VIF	AF	VIF
Constant	3.658***	3.981***		4.010***	
Beta	1.234	1.454	1.0132	1.299	1.054
Size	-1.270	-	4.931	-	-
AF	-	2.469**	2.706	1.168	2.716
Gear	0.493	0.328	1.489	0.159	1.538
B/M	1.369	2.316**	2.035	1.698*	2.048
WCN_INT	0.111	0.335	1.201	-1.264	2.424
WCN_EXT	-0.600	-0.346	1.211	-0.027	2.191
WCN_INT_Resid	0.358	0.335	1.868	0.664	1.872
WCN_EXT_Resid	0.264	-0.346	5.274	0.185	5.304
*WCN_INT*AF*	-	-	-	1.898*	2.187
*WCN_EXT*AF*	-	-	-	-0.090	1.984
Adj. R2	10.1	8.2		9.6	
F-value	2.585	2.266		2.204	
SE	0.031	0.032		0.031	
Sign.	0.013	0.028		0.023	
N	111	111		111	

***Correlation significant at the 0.01 level (2-tailed); **Correlation significant at the 0.05 level (2-tailed); *Correlation significant at the 0.10 level (2-tailed)

VIF = Variance inflation factor; Constant = Regression constant

Adj. R2 = Explanatory power of the regression model for variance in *WCN*. F-value = Indicator for statistical significance of the regression model. SE = Standard Error. Sign. = Significance level for the predictive ability of the regression model. *Beta* = Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market. *Size* = Firm size, measured as market value of equity at financial year end in £m. *Gear* = Gearing ratio, measured as long-term debt to long-term debt plus equity at financial year end. *B/M* = Book-to-market ratio, measured as the ratio of book value of equity to the market value of equity. *AF* = Analyst following, measured as the number of analysts following a firm. *WCN_INT* = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative sections of the annual report. *WCN_EXT* = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative sections of the annual report. *WCN_INT_Resid.* = Residuals obtained from the first-stage regression of the Hausman test. *WCN_EXT_Resid.* = Residuals obtained from the first-stage regression of the Hausman test. *WCN_INT*AF* = Interaction term expressing an interaction between *WCN_INT* and *AF*. *WCN_EXT*AF* = Interaction term expressing an interaction between *WCN_EXT* and *AF*.

As can be seen from Table 8.5.5, the coefficient of both residuals is not significant, hence the Null hypothesis of no endogeneity between the cost of equity capital and the disclosure of internal (*WCN_INT*) and external (*WCN_EXT*) attribution statements

cannot be rejected. This suggests that endogeneity between the cost of equity capital and internal attribution statement disclosure (WCN_INT) and external attribution statement disclosure (WCN_EXT), respectively, is not a major problem in the thesis and the use of OLS regression is appropriate (see Larcker and Rusticus 2010; Ntim et al. 2012).

Taken together, these results suggest that the findings on the association between attribution statement disclosure and the cost of equity capital as reported in section 8.4 are not influenced by the presence of endogeneity, hence the conclusions remain unchanged.

Overall, having carried out additional tests to investigate the robustness of the main results, it can be concluded that the results of the main analysis are robust and can be relied upon for interpretation.

8.6 Summary and conclusion

There is consensus in the literature that information disclosure can help overcome information asymmetry between the firm and capital market participants, reduce investor uncertainty surrounding determining expected returns, and ultimately can have beneficial effects for a firm's cost of equity capital. In this respect, one important type of disclosure are narrative explanations for corporate performance outcomes. Accounting standard setting bodies, law makers, and regulatory agencies around the world advocate or require the provision of explanations for corporate performance outcomes based on the argument that they are useful for investors' investment decision making. Hence, the question whether the disclosure of performance explanations influences the cost of equity capital becomes important. This chapter has presented the results of an investigation of the effect of the provision of performance explanations on the cost of equity capital.

The evidence relates to two major findings. On one hand, the analysis revealed that for the overall sample, while controlling for a number of factors that are known to influence the cost of equity capital, providing more extensive causal attribution

statements for corporate performance outcomes does not affect the cost of equity capital. That is, the theoretical suggestion that providing performance explanations affects the cost of equity capital could not be confirmed. Thus based on the overall sample, hypothesis H1a and H1b(i) and H1b(ii) are not supported. On the other hand, however, the analysis also provided evidence that the value relevance of attribution statements depends on a firm's level of analyst following. For firms with high analyst following (above the sample median) there is no association between attribution statements and the cost of equity capital. By contrast, for firms with low analyst following, the results show that those firms that provide more extensive performance explanations have a higher cost of equity capital. This suggests that for firms with low analyst following, analysts consider attribution statements to be useful information for investment decision making, and that firms that explain their performance outcomes in more detail face a higher cost of capital. For firms with low analyst following there is also a significant positive association between the cost of equity capital and the extensiveness of internal attribution statements. Thus hypothesis H2 is supported, as is H1b(ii) for firms with low analyst following. Additional tests demonstrated that the results are robust to different measurements of the variables.

Taken together, the findings presented in this chapter suggest that causal attribution statements are value relevant for firms which are covered by fewer financial analysts. As in this case less analyst provided information about the company is publicly available, the results suggest that therefore explanations for corporate performance given by management and their assessment of performance in the annual report can offer valuable information for investors for valuing equity.

CHAPTER 9

CONCLUSION

9.1 Introduction

This chapter presents a summary of the findings of the study against the backdrop of the research questions and hypotheses tested. It is structured as follows: First, the objective of the thesis and the research questions are presented. This is followed by, second, a summary of the empirical findings with regard to the research questions and hypotheses. Third, the implications of the thesis are highlighted followed by, fourth, the contribution of the thesis. Fifth, the limitations of the thesis are identified. The chapter concludes with suggestions for further research.

9.2 Research questions and approach

There is consensus among standard-setters and regulatory bodies around the world that the provision of complementary and supplementary commentaries of organisational accounting outcomes and future prospects in the annual report helps investors in their assessment of the firm's results and prospects. (Cole and Jones 2005; IASB 2005; ASB 2006). The review of the literature presented in chapters 2, 3 and 4 has highlighted that, although academic research has extensively examined attribution statements in a business context, there are two areas in which there is a gap in cur-

rent knowledge. First, while there is a multitude of studies analysing the determinants of information disclosure by firms, the determinants of attribution statement disclosure are not well understood. Second, while there is a large body of research on the effect of information disclosure on a firm's cost of equity capital, not much attention has been given to the question of whether a firm's performance explanations have information content for equity valuation. Based on the identification of these two gaps, the aim of the thesis was twofold:

1. To explore the determinants of causal attribution statements for corporate performance outcomes provided by management in corporate communications by UK companies. Specifically, to examine the relationship between attribution statement provision and corporate governance and firm-specific factors.

2. To investigate the economic consequences of attribution statements provided by management in corporate communication to the capital market in the UK. Specifically, to examine whether attribution statements affect the firm's cost of equity capital.

These aims led to the formulation of five research questions that the study addressed:

1. What is the nature and extent of attribution statements provided by UK listed companies on organisational performance outcomes?

2. Do corporate governance factors influence the extent and nature of attributions on organisational performance outcomes by UK listed companies?

3. Is the extent and nature of attributions on organisational performance outcomes by UK listed companies related to firm-specific factors?

4. Do attribution statements about organisational performance outcomes influence a firm's cost of equity capital?

5. Does this influence on the cost of capital depend on the types of attribution statements (e.g. internal or external)?

A quantitative approach was used to answer the research questions. A sample of 142 firms listed on the London Stock Exchange from the year 2006 was analysed. Attribution statements were extracted from the annual reports by using content analysis. Firms' attribution statement provision was measured as the percentage of the number of words used by a firm for attributions to the total number of words in the firm's narrative sections of the annual report that review and discuss performance and financial position. This resulted in an attribution wordcount index (*WCN*). This volume measure captured the detail of the attributions and the emphasis placed by the firm on explaining performance outcomes. Attribution statements were also classified as to whether an internal or external cause was given as explanation and a separate internal and external attribution wordcount index (*WCN_INT*, *WCN_EXT*) was established. This provided a measure of the volume and detail of internal and external attributions in the narrative sections. A number of hypotheses were established to analyse (1) factors that may influence attribution statement provision, and (2) the effect of attribution statements on the cost of equity capital. To test the hypotheses, univariate analysis and multiple regression analysis were used. Univariate analysis (Pearson) first examined the correlations between the dependent and the independent variables. Following that, a number of regression models were run to test the hypotheses and answer the research questions.

9.3 Summary of the findings

This section presents a summary of the key findings of the thesis. First, the results derived from the descriptive analysis are presented. Second, the results regarding the determinants of attribution statement provision followed by, third, the results for the effect of attribution statements on the cost of equity capital are presented.

9.3.1 Extent and nature of attribution statements

The descriptive analysis of the sample firms addresses research question 1. These results show that the percentage of words used for attributions to the total number

of words in the narrative sections of the annual report is generally low, with a mean value of 5.2% of the narrative review sections being used for narrative performance explanations. This indicates that firms do not accord much space in their discussions of the financial year to explaining performance outcomes. This result is in contrast to standard setters and regulators who emphasise the usefulness of explanations for making investment decisions and thus call for firms to provide explanations for corporate performance outcomes. It can be argued that firms, weighing up the costs and benefits of disclosing the reasons for their performance outcomes, judge that the costs, such as proprietary costs from disclosing information that might also be useful to competitors, are higher than the benefits, hence decide not to disclose performance explanations.

The results of the separate examination of internal and external attributions reveals that the sample firms tend to give more space to attributing outcomes to internal than to external causes, as can be seen by the considerably higher mean values for *WCN_INT* (0.037) as compared to *WCN_EXT* (0.019). This tendency for giving more extensive internal than external attributions is found in all industries analysed in the thesis. The finding of a predominance of internal attributions provides some support for the suggestion by Salancik and Meindl (1984) that firms would attribute performance more to causes internal to the firm in order to demonstrate they are in control. Moreover, this tendency is present for firms with increasing as well as decreasing performance, thus a self-serving attribution behaviour as reported by previous research is not present in the sample.[1]

9.3.2 Determinants of attribution statement provision

Regression analysis provided evidence for the influence of a number of corporate governance factors and firm-specific characteristics on attribution statement provision. This addressed research questions 2 and 3. Table 9.3.1 presents a summary of the regression results.

[1]Self-serving means attributing good outcomes to internal reasons but bad outcomes to external reasons.

Table 9.3.1: Summary of multiple regression results for the effect of corporate governance factors on attribution statement disclosure

	WCN (Ha)			***WCN_INT (Hb(i))***			***WCN_EXT (Hb(ii))***		
	Sign Pred.	Sign Obs. & Signif.		Sign Pred.	Sign Obs. & Signif.		Sign Pred.	Sign Obs. & Signif.	
Model		*MVE*	*AF*		*MVE*	*AF*		*MVE*	*AF*
PropNED (H1)	+	+**	+**	-/+	+**	+**	-/+	-	-
Dirown (H2)	-/+	+	+	-/+	+*	+	-/+	+	+
ACSize (H3)	+	-**	-**	-/+	-**	-**	-/+	+	+
ACExp (H4)	+	+	+	-/+	+	+	-/+	-	-
Size (H5)	+	-		-/+	-		-/+	-*	
AF (H6)	+		-	-/+		-	-/+		-
Gear (H7)	+	+	+	-/+	-	-	-/+	-*	-*
Profit (H8)	-/+	-*	-**	-/+	-	-	-/+	-	-
Perf (H9)	+	-	-	-/+	-	-	+	+	+
Issue (H10)	+	-**	-**	+	-*	-*	-/+	-	-

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed); * Correlation significant at the 0.10 level (2-tailed)

Sign Pred. = Sign of the association predicted; Sign Obs. & Signif. = Sign of the association observed & Significance level

PropNED = Proportion of non-executive directors on the board of directors, measured as the proportion of non-executive directors on the board of directors to the total number of directors on the board. Dirown = Executive director ownership, measured as the percentage of shares held by executive directors. ACSize = Audit committee size, measured as the number of directors on the audit committee. ACExp = Audit committee expertise, measured as the proportion of audit committee members with accounting and financial management expertise to the total size of the audit committee. Size = Firm size, measured as market value of equity at financial year end in £m. AF = Number of analysts following a firm. Gear = Gearing ratio, measured as long-term debt to long-term debt plus equity at financial year end. Profit = Firm profitability, measured as return on assets. Perfchange = Dummy variable, taking the value of 1 if the firm's performance has deteriorated from the previous financial year, measured as the percentage change in return on assets from the previous year; 0 otherwise. AF = Analyst following, measured as the number of analysts following a firm. Issue = Indicator variable if the firm has issued equity within the subsequent financial year; taking the value of 1 if the firm has issued equity within the year following the publication of the annual report; 0 otherwise. WCN = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative disclosures of a firm excluding the notes to the financial statements. WCN_INT = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements. WCN_EXT = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative disclosures excluding the notes to the financial statements.

9.3.2.1 Corporate governance characteristics

The analysis provided evidence for the significant influence of certain corporate governance characteristics on attribution statement provision. Attribution statement

provision is significantly associated with *PropNED*, *Dirown* and *ACSize*. Hence Hypotheses H1a and H1b(i), H2b(i), and H3a and H3b(i) are supported. For the remaining corporate governance factor, *ACExp*, no evidence was found that audit committee expertise influences attribution disclosure, thus Hypothesis H4 was not supported by the data.

More non-executive directors on the board are associated with more extensive attribution statements, and with more space devoted to internal explanations in the narrative sections of the annual report, consistent with H1a&b. The association with volume supports the argument that non-executive directors contribute to better monitoring and to stressing management's accountability for the firm's actions, which then can translate into better disclosure. This is consistent with agency theory considerations. In addition, having more non-executive directors on the board was found to be associated with more volume of explanations to internal causes. This supports arguments that inside and outside directors attribute performance differently (see Schaffer 2002). The level of executive director share ownership is not associated with the volume of the attribution statements provided, but shows a significant positive association with the volume of internal attribution statements. This is consistent with H2b(i) and lends some support to the suggestion that the higher management's stake in the firm, the easier it might be for them to attribute performance to their own actions, which might be an attempt to create an impression of confidence in management's abilities among existing and potential investors and the wider public. Firms with larger audit committees provide less extensive attribution statements and elaborate less on internal explanations in their narrative review sections. Thus H3a and H3b(i) are supported. This finding suggests that larger audit committees might be less efficient monitors due to negative effects of increasing group sizes. The fourth corporate governance characteristic that was investigated, audit committee expertise, was not found to be a significant determinant of attribution statement provision. H4 therefore did not find support.

9.3.2.2 Firm characteristics

A number of firm-specific characteristics were found to influence the provision of attribution statements. The analysis revealed that attribution statement provision has a significant association with firm size, gearing, profitability, and equity issuance in the following year. Hence hypotheses H5b(ii), H7b(ii), H8a are supported. Although there is a significant (negative) association between attribution disclosure and issuing shares in the following financial year, the hypothesis suggested a positive sign, hence H10a and H10b(i) are not supported. For the remaining firm-specific characteristics (analyst following and change in financial performance from the previous year) no evidence was found that they influence attribution disclosure, thus Hypotheses H6 and H9 were not supported.

Larger firms provide less extensive attribution statements to external reasons (supporting H5b(ii)), whereas there is no association of firm size with the overall aggregate volume of attribution statements. The negative coefficient suggests that large firms provide less detail in attributing performance outcomes to external factors. Higher geared firms elaborate less in their narrative sections on external attributions for performance, supporting H7b(ii). Consistent with signalling theory, this may be seen as an attempt at trying to demonstrate to the market that management itself is in control of the firm's course, not external events which are out of their control, so as to downplay the perceived riskiness of high gearing. Firms which are more profitable give less space in their narrative sections for attributions, which supports H8a. This is consistent with proprietary costs theory in that profitable firms may disclose less, in particular explanations for why they are so profitable, as they do not want to provide information that might help competitors. Firms that issue shares in the financial year following the publication of the annual report devote less space in their narrative sections to explanations for performance outcomes, and less space to internal explanations. This is contrary to expectations, since H10a and H10b(ii) suggested a positive association. It is possible that, as firms increase the overall disclosure and provide more information in their narrative sections prior to issuing shares (see Gibbins

et al. 1990; Lang and Lundholm 1993; Lang and Lundholm 2000), the proportion of wordcount for performance explanations decreases as a result of the increase in total wordcount of the narrative sections.

9.3.3 Economic consequences of attribution statement provision

The investigation of the cost of equity capital effect of attribution statement provision addressed research questions 4 and 5. Regarding the cost of equity estimates of the sample firms, the analysis shows that the mean cost of equity capital is 9.76%, with the majority of sample firms having a cost of equity capital between 5% and below 15% (85.9% of sample firms in total). Two main regression models were run. One model included an interaction term between attribution disclosure and analyst following (Model 2), and the other model was run without the interaction term (Model 1). The aggregate wordcount measure (*WCN*) and its internal and external components (*WCN_INT* and *WCN_EXT*) were analysed separately. Also, the models were run separately with either firm size (*MVE*) or analyst following (*AF*) due to the high correlation of these variables. Table 9.3.2 presents a summary of the regression results.

Table 9.3.2: Summary of multiple regression results for the effect of attribution statement disclosure on the cost of equity capital against hypotheses

CoC					
	Sign Pred.	Sign Obs & Signif.		Sign Obs & Signif.	
		WCN		***WCN_INT/WCN/EXT***	
Model		Size	AF	Size	AF
Beta	+	+*	+*	+	+
Size	-	-***		-***	
Gear	+	+	+	+	+
B/M	+	+*	+***	+*	+**
AF[a]	-		+***		+**
WCN	-	+	-/+		
WCN_INT	-				+/-
WCN_EXT	-				-/+
*WCN*AF*	+/-		+*		
*WCN_INT*AF*	no prediction				+*
*WCN_EXT*AF*	no prediction				-

*** Correlation significant at the 0.01 level (2-tailed); ** Correlation significant at the 0.05 level (2-tailed); * Correlation significant at the 0.10 level (2-tailed)

Sign Pred. = Sign of the association predicted; Sign Obs. & Signif. = Sign of the association observed & Significance level

[a] A negative association between analyst following and the cost of capital is expected. In the empirical analysis, analyst following is entered in the regression models as a dummy variable taking the value of 1 (0) if analyst following is lower than or equal to the median number of analysts following the sample firms. The positive association found empirically shows a positive association between low analyst following and the cost of capital, which is consistent with the theoretical prediction of a negative association between analyst following and the cost of capital.

Beta = Firm beta, measuring a firm's systematic risk; measures the sensitivity of a stock's return to variation in the return of the overall market. *Size* = Firm size, measured as market value of equity at financial year end in £m. *Gear* = Gearing ratio, measured as long-term debt to long-term debt plus equity at financial year end. *B/M* = Book-to-market ratio, measured as the ratio of book value of equity to the market value of equity. *AF* = Analyst following, measured as the number of analysts following a firm. *WCN* = Wordcount of attributions per narrative disclosures, measured as the percentage of words used for attributions to the total number of words in the narrative sections of the annual report. *WCN_INT* = Wordcount of internal attributions per narrative disclosures, measured as the percentage of words used for internal attributions to the total number of words in the narrative sections of the annual report. *WCN_EXT* = Wordcount of external attributions per narrative disclosures, measured as the percentage of words used for external attributions to the total number of words in the narrative sections of the annual report. *WCN*AF* = Interaction term expressing an interaction between *WCN* and *AF*. *WCN_INT*AF* = Interaction term expressing an interaction between *WCN_INT* and *AF*. *WCN_EXT*AF* = Interaction term expressing an interaction between *WCN_EXT* and *AF*.

9.3.3.1 *WCN*

In terms of the control variables, all variables show the expected sign of the association and all, except one, are significant as expected. There is a positive association between the cost of equity capital and a firm's beta, book-to-market-ratio and low analyst following, while there is a negative association between the cost of equity capital and firm size. Only gearing is insignificant. This suggests that firms with higher beta, book-to-market-ratio and low analyst following have a higher cost of equity capital. The results also suggest that the cost of equity capital is lower for larger firms, and is unrelated to a firm's gearing.

Regarding the disclosure measures, the results show that for the overall sample, while controlling for a number of other factors that the literature found to influence the cost of equity capital, providing more extensive attribution statements for corporate performance outcomes does not affect the cost of equity capital. Hence based on the overall sample, hypothesis H1a of a negative association between attribution statements and the cost of capital is not supported. H1b (i) and H1b(ii), which proposed that internal and external attributions have their own separate effect on the cost of equity capital , are also not supported. This suggests that, given management's incentives for self-serving disclosures, investors might perceive these performance explanations as lacking credibility and verifiability. Hence investors might see attributions as 'cheap talk' and disregard attribution statements in their assessment of performance and firm value, which might explain the lack of a significant association with the cost of equity capital. Alternatively, it is possible that investors knew the information before so that it was already incorporated in price when the attribution statements were provided in the annual report, which is published with a delay after the announcement of the results.

The thesis, however, also provided evidence that attribution statements can be value relevant, as the analysis demonstrated that the association between attribution statements and the cost of equity capital is influenced by the level of analyst following. For firms with high analyst following, attribution statements are not associated with

the cost of equity capital. By contrast, for firms with low analyst following, those firms that provide more extensive performance explanations have a significantly higher cost of equity capital. Thus hypothesis H2, which proposed that the association between attribution statement disclosure and the cost of equity capital is stronger for firms with lower analyst following, is supported. This suggests that firms with low analyst following that explain their performance outcomes in more detail face a higher cost of equity capital. As for firms with lower analyst following there is less analyst-provided information about the firm's performance available which investors can use in their investment decision making, it can be argued that firms' own disclosures become an important source of information for investors. It is possible that in the presence of less analyst-provided information about a firm's performance outcomes, investors might turn to the information they would normally perceive as 'cheap talk' in order to find clues about the reasons for performance. Hence, the significant association with the cost of capital for these firms. This finding also suggests that potentially biased attribution statements are not necessarily disregarded by investors, but lead them to make negative inferences about firm value and require a higher rate of return. It is also possible that investors, from analysing the explanations and drawing inferences for the firm's prospects, come to the conclusion that the firm's future performance will be worse than current performance. This could also lead them to requiring a higher rate of return.

9.3.3.2 *WCN_INT/WCN_EXT*

The results for the control variables are similar to those in the aggregate *WCN* models, but are generally less significant. Consistent with the aggregate attribution (*WCN*) measure, the cost of equity capital has a negative association with firm size and a positive association with the book-to-market ratio and low analyst following. Gearing is insignificant. Beta, however, is also insignificant. This suggests that the cost of capital is lower for larger firms, higher for firms with a higher book-to-market ratio and low analyst following, and unrelated to a firm's beta and gearing.

With regard to the relationship between the internal and external attribution

measure (*WCN_INT* and *WCN_EXT*) and the cost of equity capital, the results are similar to the results for the aggregate wordcount measure. For the overall sample of firms, the extensiveness of internal or external attribution statements does not influence the cost of equity capital. Thus Hypotheses H1b(i) and H1b(ii) that proposed that both types have their own separate impact on the cost of equity capital is not supported if the overall cross-section of firms is considered. This further suggests that attribution statements might normally be considered 'cheap talk' and disregarded by investors.

But the analysis also provides evidence that for firms with low analyst following, there is a significant negative association between internal attributions (*WCN_INT*) and the cost of equity capital, while external attributions (*WCN_EXT*) are unrelated to the cost of equity capital. This provides support for hypothesis H2 and also H1b(ii) and suggests that for firms with low analyst following, those firms that provide more detailed internal attribution statements have a higher cost of capital. This suggests that for firms with low analyst following, disclosing internal reasons behind performance offers value relevant information to investors. That more internal explanations are associated with a higher cost of capital might be due to this information revealing internal factors that investors consider to have a negative effect on future firm performance, hence they require a higher rate of return. In addition, given the potential self-serving bias in performance attributions, it is also possible that investors do not perceive the explanations as credible. This may cause investors to develop a negative impression of the firm, and lead them to require a higher rate of return.

9.4 Implications of the study

The results of the thesis have a number of implications for accounting standard setters, regulators and policy makers. These implications are discussed here.

First, the findings regarding the determinants of attribution provision can provide feedback to policy makers about the effectiveness of corporate governance mechanisms and for improving disclosure. The thesis shows that firms with a higher

proportion of non-executive directors on the board provide more extensive attribution statements. This is consistent with the suggestions by regulators and research and provides support for current policies. The results also show that audit committee size influences disclosure. Opposite to expectations, however, the thesis finds that more extensive attribution statements are associated with smaller audit committees, as is the provision of more space to internal attribution statements. These findings are in contrast to the suggestions by research and committees of enquiry that a larger audit committee would be more effective, as is reflected in the UK Corporate Governance Code (FRC 2010b) that recommends a minimum of 3 members. As other studies also have not found clear evidence to confirm the notion that better disclosure would be associated with larger audit committees (see chapter 3), this suggests the need for a closer examination of potential reasons in light of current policies. In addition, the study finds that audit committee expertise is not associated with attribution statement disclosure. In light of the emphasis that the Corporate Governance Code places on financial expertise on the audit committee as an important factor to the committee's effectiveness, as reflected in the current policy of recommending to have at least one member with financial expertise (FRC 2010b), this also suggests the need for a closer look at current policies and why empirical support is weak. Moreover, the finding that a number of sample firms did not fully comply with the recommendation of having at least one member with relevant qualifications or experience on the audit committee also suggests the need for a closer investigation into the reasons.

A second implication of the results comes from the analysis of the value relevance of attribution statements, which can provide feedback to policy-makers and standard setters on the usefulness of explanations for performance outcomes. This is particularly important against the background of the costs a) to firms of providing information, and b) to the regulators to monitor compliance with the rules. The results show that the standards setters' view that explanations for corporate performance outcomes have information content that investors use for investment decisions, and therefore the recommendation to provide this information, is not unconditionally supported. While the results show that firm-provided attribution statements are useful

for firms with low analyst following, they do not seem to be useful to investors for firms with higher analyst following. This finding suggests that attributions can help reduce information asymmetry for those firms where information asymmetry is higher, thus for firms for which less external and independent information is available. This provides support for the standard setters' view that performance explanations provided by management can help reduce information asymmetry, and supports current policies of recommending that firms explain their performance outcomes in their annual report. That attribution statements are not value relevant for firms with higher analyst following, thus with more external and independent information available, however, does not support the standards setters' view and current policy. Moreover, the finding that attribution statements to internal reasons (for firms with low analyst following) are value relevant provides policy makers with an indication of what type of information investors might see as important for their decision making processes. This finding may enrich discussions about future disclosure regulations or changes to existing policies.

As a third implication, in view of the research findings that narrative information may be subject to impression management and have a self-serving bias (e.g. Bettman and Weitz 1983; Huff and Schwenk 1990; Clapham and Schwenk 1991; Wagner III and Gooding 1997), the thesis can give standard setters an indication of whether more regulation of narratives should be considered and action taken. The findings presented in this thesis show that firms have a strong tendency to elaborate more on internal causes for performance than on external reasons. That is, management would prefer to emphasise that success is due to their own actions and skills and not so much due to external influences (in case of good performance); they would also prefer to take responsibility for bad outcomes instead of blaming external factors. This can also be considered in the light of the finding that a higher level of executive director share ownership is associated with more extensive internal attributions which suggest that firms in which directors own more of the outstanding shares attribute outcomes more to their own strengths and capabilities than to external factors. Although no evidence was found that making a profit/loss is linked to self-acclaiming or externally-blaming

attributions, the preference for internal attributions still should be explored further against the backdrop that attribution statements may influence investor decision making.

The findings can inform discussions by standard setters and regulators about the adequacy of current regulations, and may inform future discussions regarding potential changes in regulation of performance explanations. The danger that narrative disclosures are used for impression management purposes, together with the finding that performance explanations are used by investors for valuing a firm, suggests that policy makers should take a closer look at firms' attribution behaviour and, if deemed necessary, take action to limit management's potential for managing investors' impressions of the firm. Such an investigation can also be seen in the context of the possibility that the usefulness of attribution statements might be limited because investors, aware of management's impression management tendencies, perceive attribution statements as not always credible and therefore disregard them.

9.5 Contribution of the study

The thesis makes six contributions in two areas. The first area is on the determinants of attribution statement provision. Here the thesis makes two contributions.

1. The thesis provides evidence on the determinants of attribution statements in the annual reports of UK listed firms by using a measure that has not been previously applied in the literature to measure attribution statements. Attributions are measured as the percentage of words used for performance explanations to the total number of words in the firm's narrative review sections to capture the volume and the emphasis firms place on explaining performance. Previous research has used the presence/absence of an attribution or the total number of explanations provided by a firm to develop an attribution measure. In order to understand attribution behaviour, more detailed measures provide better insights than categorical measures.

2. The thesis provides evidence on the factors that influence the extent and the

type of performance explanations provided by firms by using a comprehensive list of firm-specific characteristics, and of firms' corporate governance mechanisms in particular. The scarce previous research has analysed only a limited range of possible determinants from either category and has not provided evidence based on using a comprehensive list of factors combined in one study. This thesis has provided evidence that a number of corporate governance factors (audit committee size, proportion of non-executive directors on the board of directors, executive director ownership) and firm-specific characteristics (market value, gearing, profitability, share issue in the following year) influence the extensiveness of attribution statement provision as well as the space given to internal and external attribution statements.

The second area to which the thesis contributes is on the effect of performance explanations on the firm's cost of equity capital. The contribution is fourfold.

1. The thesis provides evidence of an association between a firm's performance explanations and its cost of equity capital based on a quantitative approach to directly estimate the cost of capital effects. It contributes by using an implied cost of equity capital measure (the PEG model by Easton 2004) unlike previous research that either analysed stock price reactions to attribution announcement (Baginski et al. 2000; Baginski et al. 2004; Baginski et al. 2008; Kimbrough and Wang 2009) or used earnings valuation multiples as a proxy in an experiment (Barton and Mercer 2005). Hence this method allows a precise quantification of the longer term effect as opposed to a short term market reaction or the use of earnings valuation multiples. Using this measure, the thesis shows that attribution statements are value relevant for firms with low analyst following, while for firms with high analyst following attribution statements do not affect the cost of equity capital.

2. The thesis contributes to the growing body of research on how different disclosure types affect the cost of equity capital. It also provides evidence that the association between attribution statements and the cost of equity capi-

tal is influenced by an interaction between attribution statements and analyst following.

3. The thesis provides the first evidence of the relationship between attribution statements and the cost of equity capital in a UK setting. While previous research on the value relevance of attribution statements was done on US data (e.g. Baginski et al. 2000; Baginski et al. 2004), the literature in the UK has only examined factors that influence attribution behaviour (e.g. Clatworthy and Jones 2003; Aerts and Tarca 2010).

4. The thesis responds to calls for more research on the relation of disclosure and the cost of capital by both academic studies (e.g. Healy and Palepu 2001; Botosan 2006) and professional bodies (ICAEW 2004) to better understand the relation of information asymmetry, disclosure, and the cost of capital. The thesis contributes by providing more evidence that the relationship between disclosure and the cost of equity capital is complex and is influenced by interactions between disclosure and information intermediaries.

9.6 Limitations of the study

The thesis is subject to a number of limitations that need to be kept in mind when interpreting the results. However, it should be noted that these limitations do not reduce the value of the results.

First, sample size is a limiting factor. The method of content analysis that is used to extract attribution statements from the annual reports is costly in terms of labour and of time. Sample size therefore had to be restricted in order to keep the project in a manageable scope. Despite this limit, however, the sample size used can be considered sufficient to yield reliable results that can be generalised to a wider population of firms. Moreover, as the number of observations per independent variable required to obtain robust regression results is well above the minimum number recommended in the literature, sample size does not impair the results.

Second, attribution statements can be ambiguous and difficult to classify as they can fit into more than one category. As Baginski et al. (2004) have pointed out, any resulting misclassification can cause bias in the measure and may affect the significance of the subsequent analysis. This risk has been minimised by setting clear guidelines for the classification process and by employing a second coder to test for consistency in the coding.

Third, the thesis focused on causal attribution statements in the annual report. Hence the findings regarding the determinants of attribution disclosures as well as their effect on the cost of equity capital give an indication only for this disclosure medium. However, as the methodology chapter has laid out, the annual report can be considered the most appropriate representative of firms' attribution disclosures and was therefore used as source of attributions to address the aims of the thesis.

Fourth, the Adjusted R^2 in the regression models shows that there still is variation in the dependent variable that cannot be explained by the variables analysed. In the attribution determinants model, Adjusted R^2 ranges from 8.4% to 12.9%, leaving 91.6% to 87.1% of cross-sectional variation in attribution statement provision unexplained. Similarly, in the model exploring the effects of attribution statement provision on the cost of equity capital, Adjusted R^2 ranges from 9.4% to 13.9%, indicating that 90.6% to 86.1% of the cross-sectional variation in the cost of equity capital cannot be explained by the disclosure measures nor the control variables. These values indicate that there are still other factors that influence (1) the provision of attribution statements and (2) the cost of equity capital.

Fifth, both a firm's disclosure level and the cost of equity capital are difficult to measure. The literature has highlighted that the proxies used for both measures can be noisy (see, e.g. Healy and Palepu 2001; Core 2001). The measure of attribution statement provision is based on a self-constructed checklist. On one hand, this increases validity, but on the other hand makes replication more difficult as its development involves subjective judgement. The measure of the cost of equity capital is an estimate of a variable that cannot be directly observed. Hence both disclosure and cost of equity capital measures contain by definition an element of imprecision.

These measurement issues might reduce the power of the tests (see Healy and Palepu 2001). However, both measures were tested for their reliability and validity and the tests showed that both are reliable and valid measures of the underlying concept. This helps to minimise measurement issues.

Sixth, the analysis was carried out for the cross-section of firms for one year. That is, the investigation cannot take account of the time dimension in the relationship between attribution statements of consecutive years. For the determinants of attribution provision, this means it cannot analyse a potential interaction between attribution statements made in different financial years, whether attribution statement provision in one year might potentially be influenced by what attributions had been given in the previous year. For the effect of attribution statements on the cost of equity capital, this means that the analysis does not capture whether previous years' attribution statements might influence investors' perception and the value relevance of attributions given in the current year.

Seventh, potential endogeneity issues between attribution statement disclosure and the cost of equity capital can be considered another limitation. Healy and Palepu (2001) point out that there is potentially a number of omitted correlated variables in the relationship between disclosure and capital market variables, so that disclosure itself might have a weaker effect on other capital market variables such as the cost of capital than is assumed, and than research findings might suggest. In order to assess whether endogeneity problems between attribution disclosure and the cost of equity capital might have influenced the results in this thesis, a test was carried out to detect the potential presence of endogeneity. No evidence for an endogenous relation was found, which helps to reduce concerns about the effect of endogeneity on the results.

9.7 Suggestions for further research

There are a number of avenues for further research to build on the findings of this thesis.

1. Future research could use other information sources for the analysis of attribu-

tion statements such as corporate websites, analyst presentations, earnings announcements. This could give insight into whether a firm's attribution provision is consistent across different disclosure media, or whether there are differences regarding type and extensiveness of attribution statements. This can provide a better understanding of a firm's attribution disclosure strategy.

2. A longitudinal study over several years could be undertaken in order to explore changes in attribution behaviour over time. This might reveal how attribution statements in a given year are influenced by the statements given in previous years, whether, and if so, how firms take prior attributions into consideration when explaining current performance. Moreover, this might shed more light on the question of how attribution provision reacts to changes in corporate performance. A potentially fruitful way of carrying out such an investigation could be using panel data, focusing on a limited number of firms but tracking their development over time.

3. This thesis has provided evidence for a number of factors that influence attribution statement provision. Further research could be conducted that explores additional factors, such as top management turnover, or corporate diversification.

4. With regard to the cost of equity capital effect of attribution statements, future research might use different corporate documents for analysis. For instance, earnings announcements could be used to explore the effect on the cost of equity capital that stems from the publication of performance explanations that accompany the announcement of the results. Future research could also compare the cost of capital effect of attribution statements provided in different corporate documents in order to shed light on potential differences in the value relevance of attribution statements provided via different disclosure avenues.

APPENDIX A

APPENDIX

A.1 Alphabetical list of sample firms

1	4Imprint Group	26	Cadbury
2	AEA Technology	27	Carclo
3	Aggreko	28	Care UK
4	Air Partner	29	Carphone Warehouse Group
5	Alexon Group	30	Centaur Media
6	Alphameric	31	Centrica
7	Alterian	32	Chapelthorpe
8	Amstrad	33	Charter International
9	Anite	34	Chemring Group
10	Arena Leisure	35	Compass Group
11	Arriva	36	Computacenter
12	Ashley (Laura) Holdings	37	Cookson Group
13	Associated British Foods	38	Corin Group
14	AstraZeneca	39	Cropper (James)
15	Avis Europe	40	Davis Service Group
16	Avon Rubber	41	Delta
17	BBA Aviation	42	Devro
18	Beale	43	Dignity
19	BG Group	44	Dyson Group
20	Bovis Homes Group	45	Erinaceous
21	British Airways	46	Expro International
22	British Energy Group	47	Fidessa Group
23	British Polythene Industries	48	Filtrona
24	British Sky Broadcasting	49	First Group
25	BT Group	50	Flying Brands Units
51	Fuller Smith	79	Management Consultants Group
52	Future	80	Marshalls

53	Galliford Try	81	McAlpine (Alfred)
54	Games Workshop	82	Meggitt
55	Greggs	83	Menzies (John)
56	Halfords Group	84	Microgen
57	Hampson Industries	85	Misys
58	Harvey Nash Group	86	Mitchells & Butlers
59	Hays	87	Morrison (WM) Supermarkets
60	Headlam Group	88	Morse
61	Hikma Pharmaceuticals	89	Moss Brothers Group
62	HR Owen	90	North Midland Construction
63	Intercontinental Hotels Group	91	Northern Foods
64	IMI	92	OPD Group
65	Imperial Tobacco Group	93	Oxford Instruments
66	Inchcape	94	Pace
67	Invensys	95	Parity Group
68	ITE Group	96	Pearson
69	JJB Sports	97	Pendragon
70	Johnson Services Group	98	Persimmon
71	KCom Group	99	Petrofac
72	Kelda Group	100	Porvair
73	Ladbrokes	101	Randgold Resources
74	Latchways	102	Rank Group
75	Lavendon Group	103	Raymarine
76	Lincat Group	104	Reckitt Benckiser Group
77	Low & Bonar	105	Reed Elsevier
78	MacFarlane Group	106	Renishaw
107	Rentokil Initial	135	Victoria
108	Robert Walters	136	VP
109	ROK	137	VT Group
110	Rotork	138	WH Smith

111	RPC Group	139	Wolseley
112	Scottish Power	140	Wood Group (John)
113	SDL	141	WSP Group
114	Senior	142	XP Power (DI)
115	Severn Trent	143	Yell Group
116	Shire	144	Yule Catto
117	Spectris	145	Zetex
118	Speedy Hire	146	Zotefoams
119	Spirax-Sarco		
120	St.Ives		
121	Surfcontrol		
122	Tarsus Group		
123	Tate & Lyle		
124	Taylor Nelson Sofres		
125	Telecom Plus		
126	Tesco		
127	Thorntons		
128	Trinity Mirror		
129	Tullow Oil		
130	Umeco		
131	Unilever (UK)		
132	United Business Media		
133	UTV Media		
134	Venture Production		

A.2 Examples of attribution statements to the five performance outcomes

Sales

Plendil sales for the full year were down 23% worldwide as a result of generic competition in the US market, where sales declined by 49% to $84 million. (Astra Zeneca 2006, p. 19)

Revenue decreased by 1.3% to $113.7 million, compared to $115.2 million in 2005. The change was primarily due to continued price erosion, which was only partially offset by volume increases, and a limited contribution from new product launches. (Hikma Pharmaceuticals 2006, p. 13)

Costs

Direct and indirect costs have been reduced by 11.5% (£11.1 million) as a result of changes in the UK store portfolio, volume changes and other UK overhead savings. (Laura Ashley 2006, p. 5)

Operating expenses before exceptional items have increased substantially during the year from £15m to £19.5m. The principal elements of this are higher commission payments to our distributors and an increase in our bad debt charge (in line with the growth in turnover), and an increase in the average number of staff we employ to 211 during the year under review (which has enabled us to improve customer service, as well as significantly enhancing the strength of the management team). (TelecomPlus 2006, p. 10)

Profit/Profitability

Profits per unit in the existing business were down year on year mainly due to the weakness in the new car market. (Pendragon 2006, p. 6)

Profit from operations decreased £86 million (9%) to £909 million compared to 2005. This was driven by: an increase in restructuring costs of £62 million; an increase of £32 million in amortisation and impairment of intangible assets, due to the amortisation charge from definite life CSBG customer relationships and contracts and the impairment of £15 million goodwill relating to the Group's investment in Cadbury Nigeria; a decrease of £25 million in the IAS 39 adjustment; and a £30 million charge arising from the UK product recall. (CadburySchweppes 2006, p. 76)

Cash Flow

The cash flow in the year was affected by the recorded losses and significant changes in working capital. There was a significant increase in finished goods and component inventories due to delay in product approval preventing shipments before the year-end. The inventory increase, from £10.1m to £34.8m, most of which took place at the end of the year, also affected the trade payables position, which increased from £22.3m to £38.7m. The trading losses have also been a significant factor in the year's cash outflow. (Pace Microtechnology 2006, p. 15)

The year ended March 2006 produced a free cash flow excluding legacy payments of £100 million (2005: £39 million). After payments totalling £175 million (2005: £181 million) in respect of legacy liabilities, total free cash outflow was £75 million (2005: outflow of £142 million). The improvement in free cash flow excluding legacy payments was influenced by higher operating profit, improved working capital management, reduced net capital expenditure and lower restructuring costs. (Invensys 2006, p. 9)

Debt

Net debt was £356.9 million, significantly lower than at the end of 2005 (£527.1 million). The lower debt resulted from the transfer of £173.1 million of debt to Fiberweb prior to its demerger and the balance to the impact of exchange rates on the translation of our Dollar debt which reduced net debt by £77.1 million. This was offset by a net cash outflow of £76.1 million in the period. BBA Aviation (2006, p. 15)

> The increased capital expenditure, increased pension funding and investment in working capital during the year result in increased Group borrowings at year-end of £6.9 million (2005: £3.7 million). Beale (2006, p. 9)

A.3 Figures

Figure A.3.1: Histograms and QQ-Plots for normality tests of firm characteristics (I)

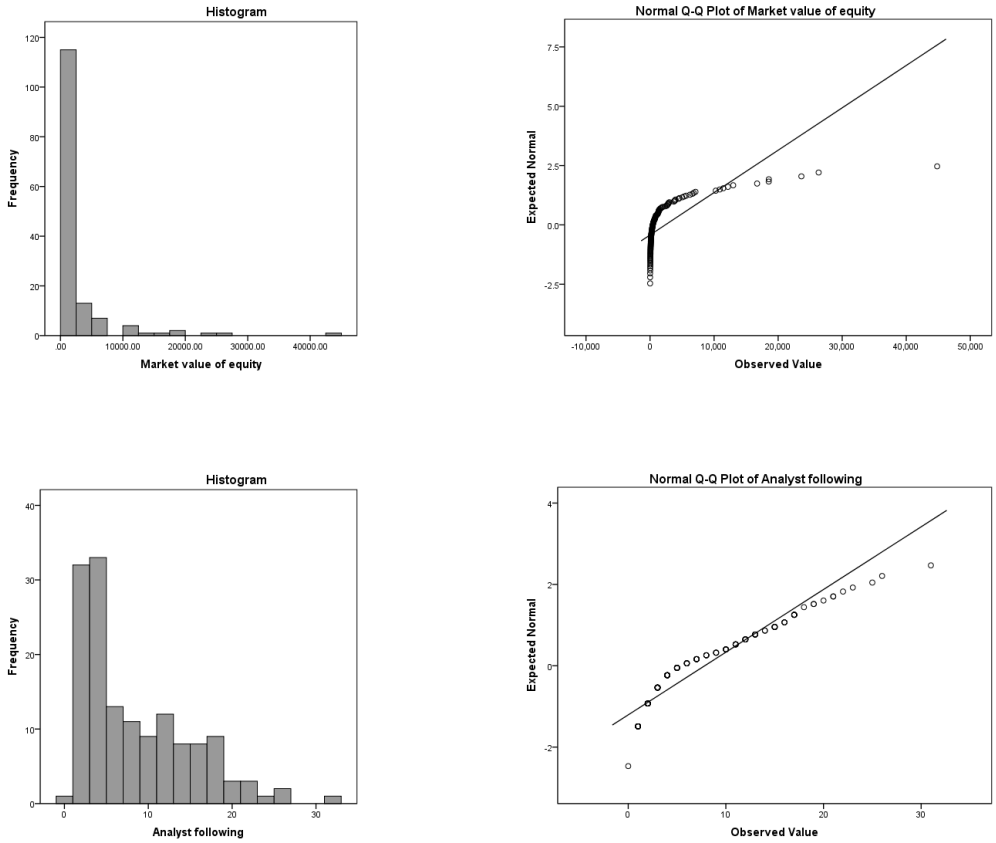
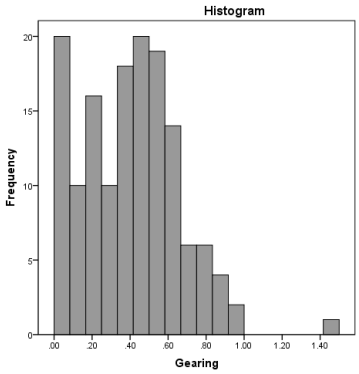
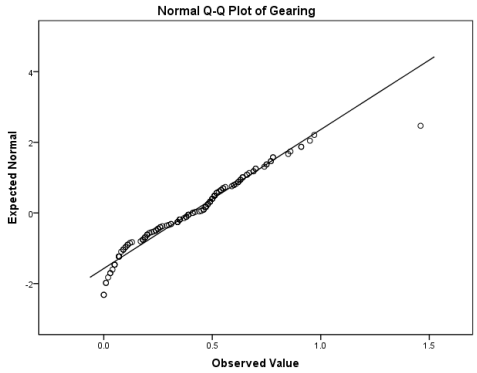
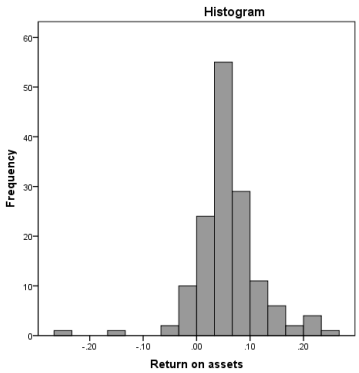
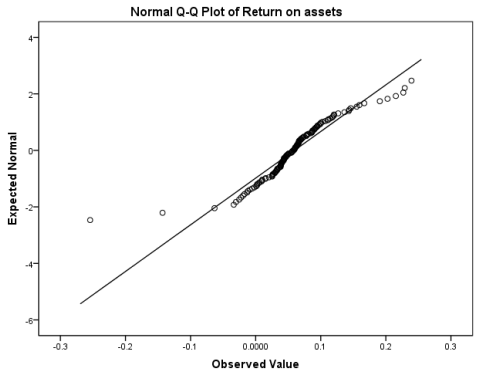


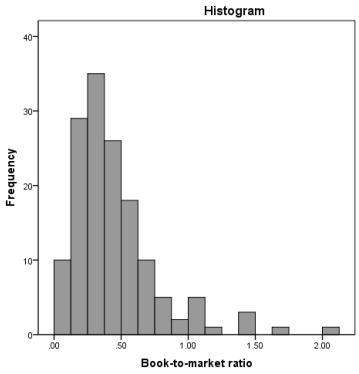
Figure A.3.2: Histograms and QQ-Plots for normality tests of firm characteristics (II)











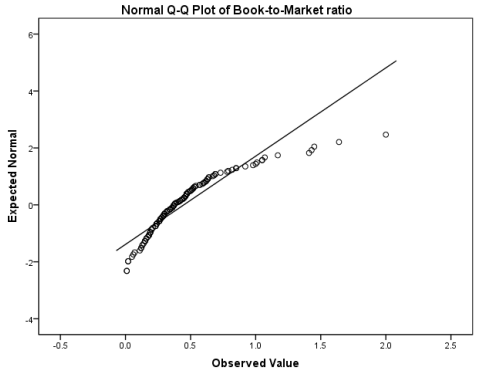


Figure A.3.3: Histograms and QQ-Plots for normality tests of corporate governance variables (I)

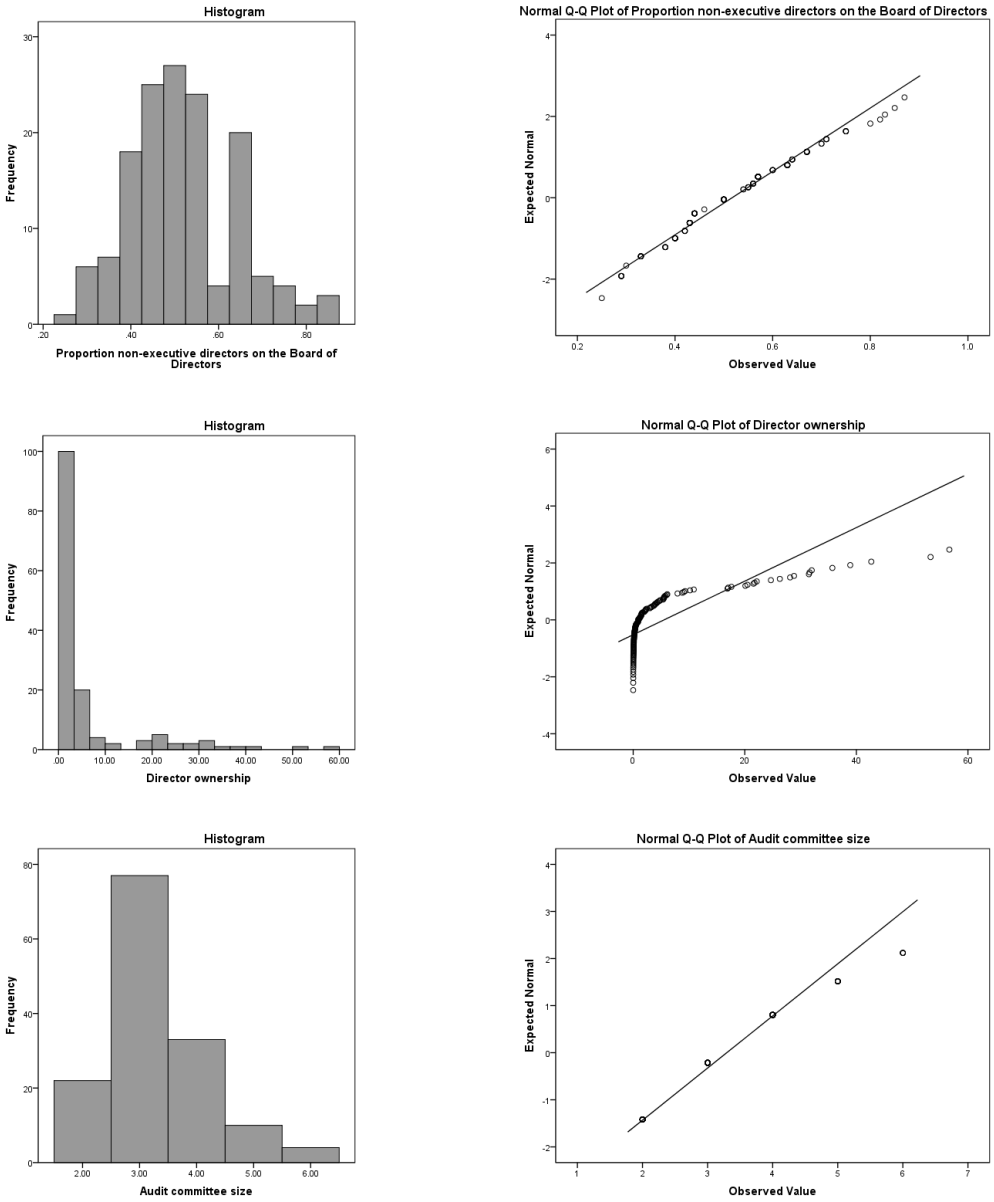


Figure A.3.4: Histograms and QQ-Plots for normality tests of corporate governance variables (II)

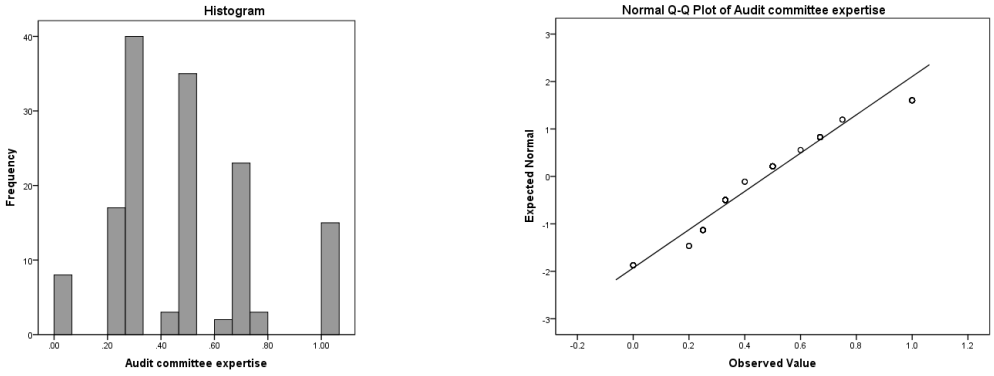


Figure A.3.5: Histograms and QQ-Plots for normality tests of the *WCN* attribution disclosure measures

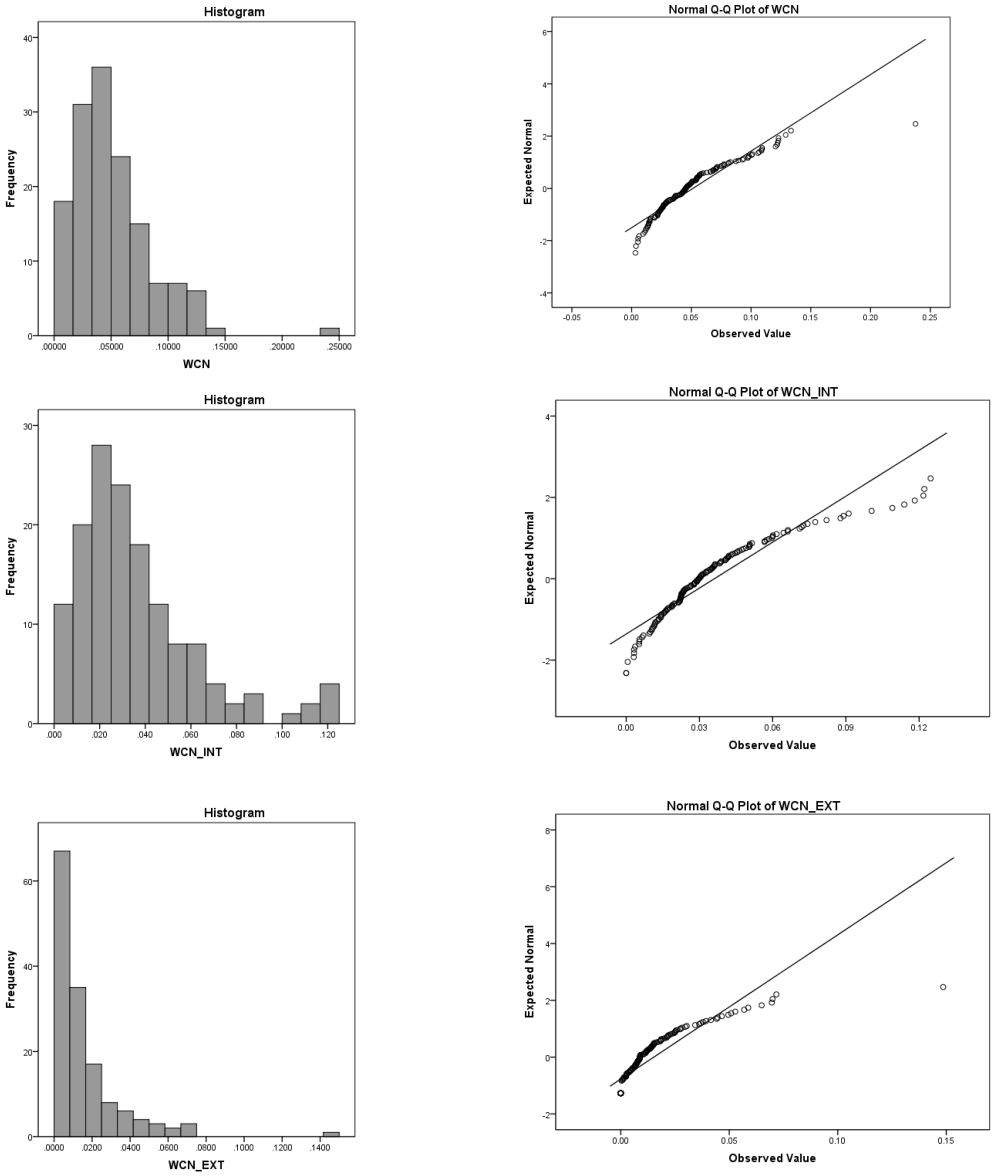


Figure A.3.6: Plots of the regression residuals *WCN*

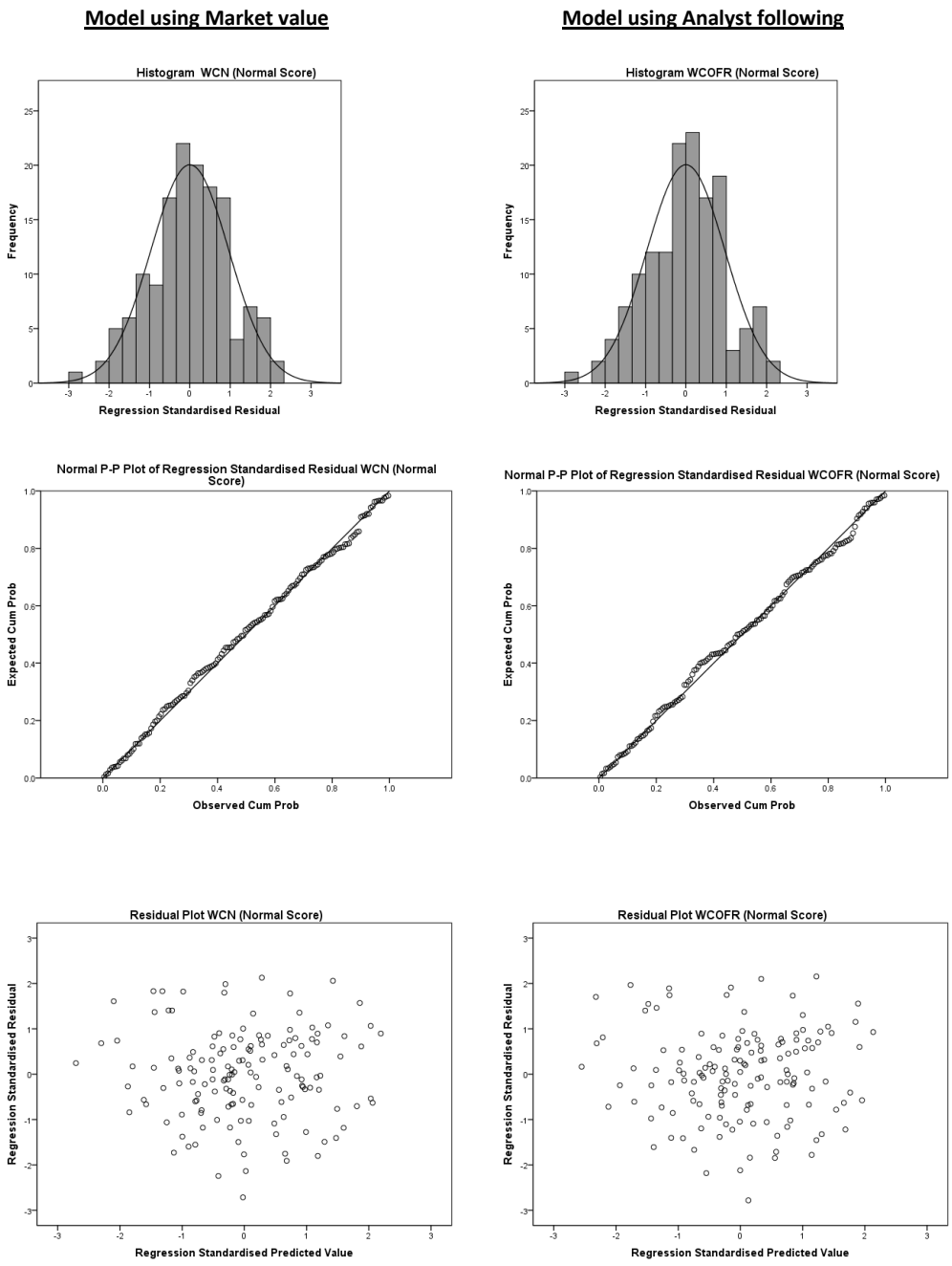


Figure A.3.7: Plots of the regression residuals *WCN_INT*

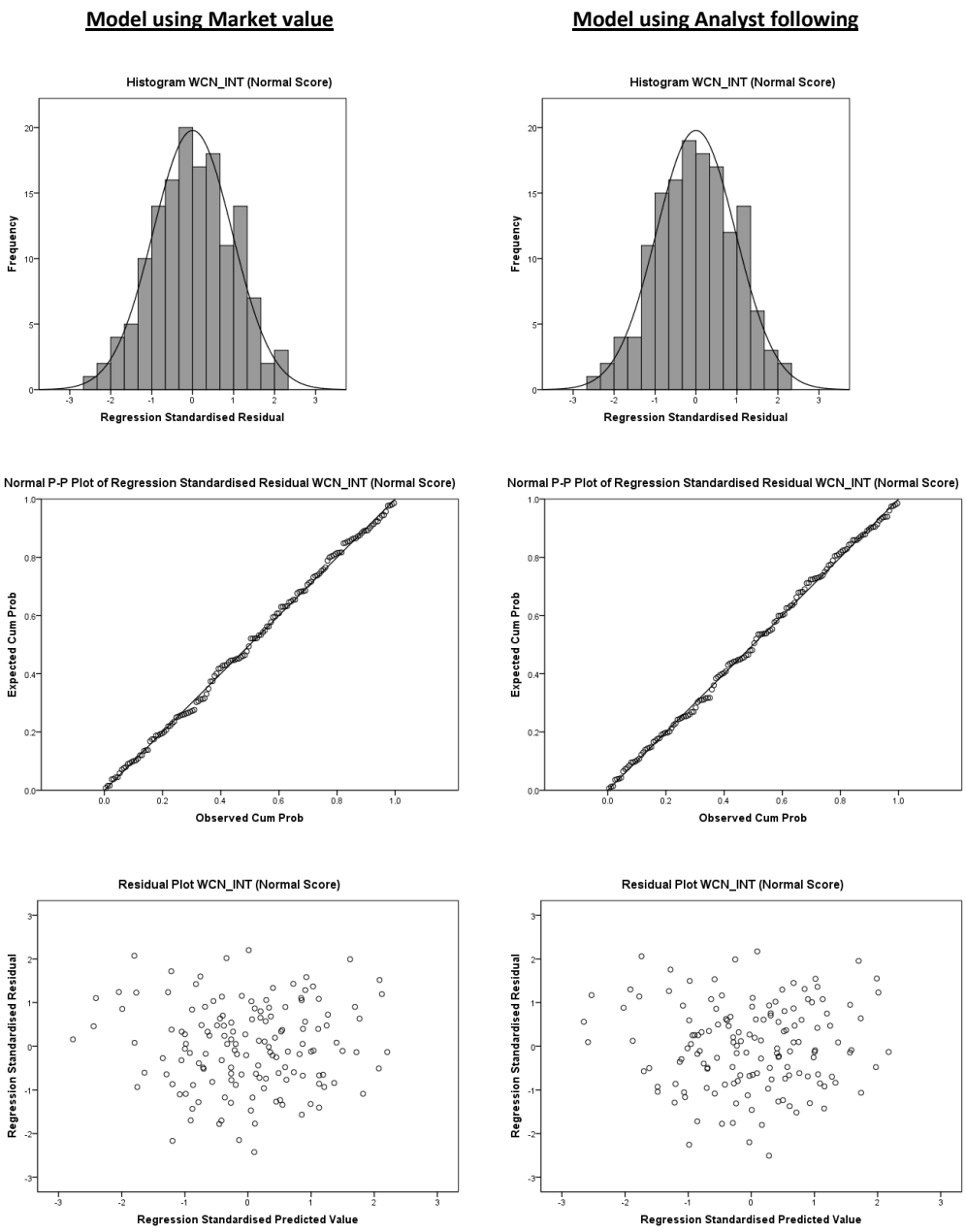


Figure A.3.8: Plots of the regression residuals *WCN_EXT*

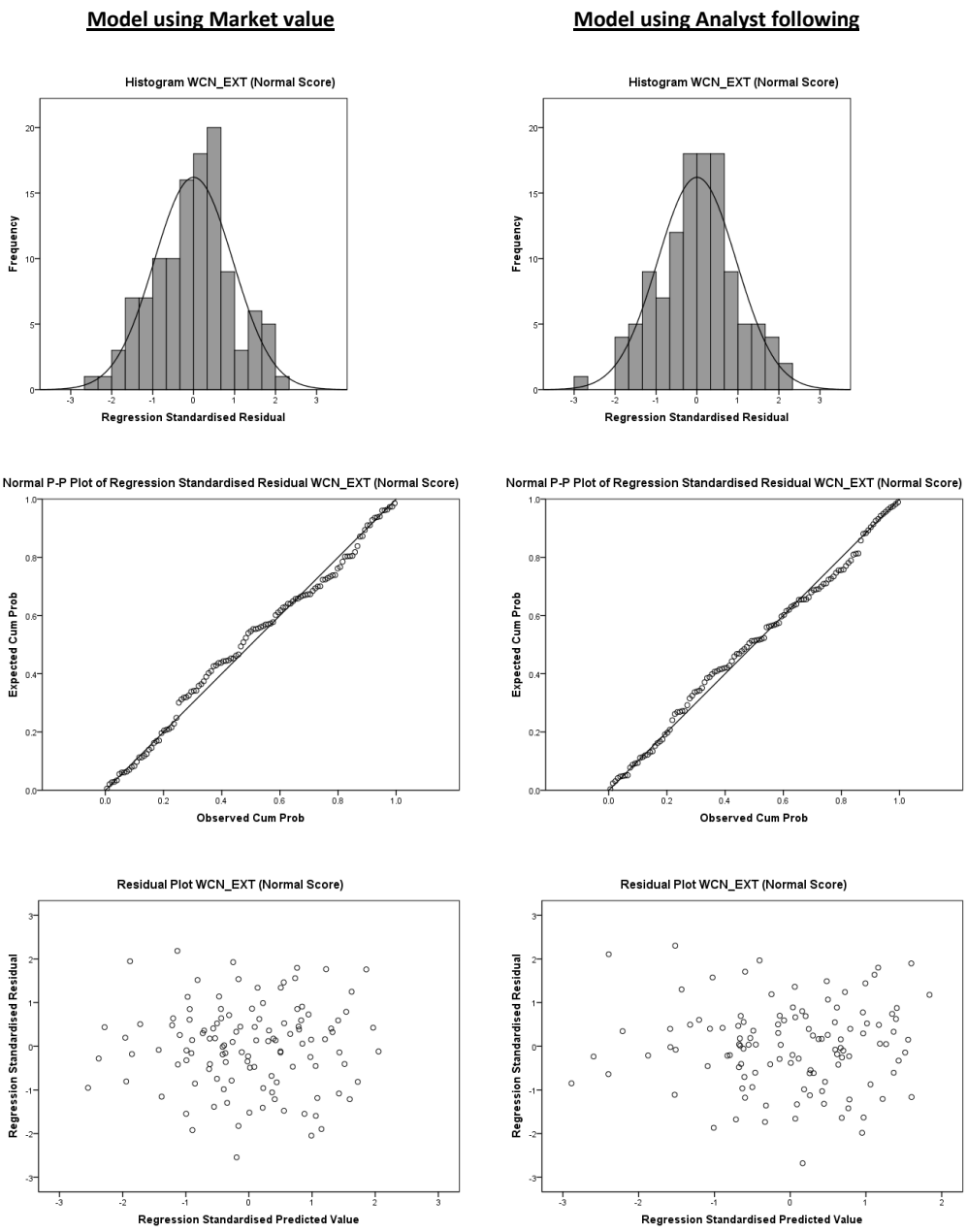
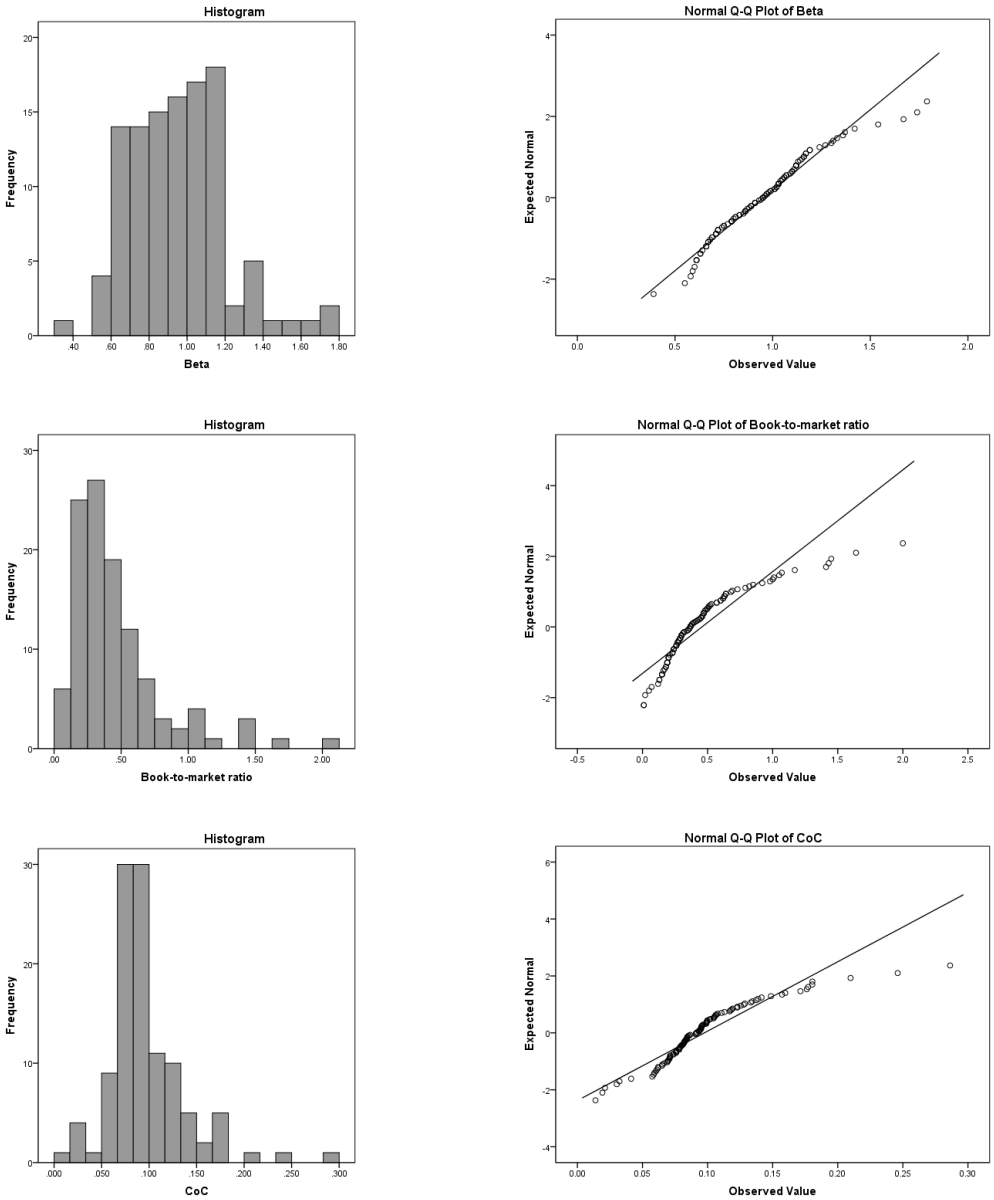


Figure A.3.9: Histograms and QQ-Plots for normality tests of firm characteristics



A.4 Tables

Table A.4.1: Durbin-Watson and Cook's distance statistics for the *WCN* attribution disclosure measures

		WCN		*WCN_INT*		*WCN_EXT*	
		MVE	AF	MVE	AF	MVE	AF
Durbin-Watson		2.028	2.036	1.762	1.759	2.134	2.167
Cook's distance							
	Min	0.000	0.000	0.000	0.000	0.000	0.000
	Max	0.056	0.052	0.074	0.073	0.079	0.052
	Mean	0.008	0.008	0.009	0.009	0.010	0.009
	StdDV	0.011	0.011	0.014	0.014	0.014	0.013

Table A.4.2: Descriptive statistics and normality test *Total assets* (*TA*)

Descriptive statistics								
		Mean	Std. Dev.	Median	25%	75%	Min	Max
TA		2310.550	5294.832	371.947	101.770	1796.673	19.310	37072.000
Normality test								
		Mean	Median	StdDV	Skew.	Kurt.	K-S Lilliefors	K-S Sign.
Untransformed								
TA		2310.550	371.947	5294.832	4.128	19.934	0.330	0.000
Transformed								
TA	*Ln*	6.153	5.915	1.753	0.474	-0.546	0.073	0.058

Table A.4.3: Durbin-Watson and Cook's distance statistics *CoC* model

		WCN		*WCN_INT/EXT*	
		MVE	*AF*	*MVE*	*AF*
Model 1					
Durbin-Watson		1.947	1.947	1.833	1.747
Cook's distance					
	Min	0.000	0.000	0.000	0.000
	Max	0.083	0.074	0.115	0.103
	Mean	0.008	0.008	0.011	0.011
	StdDV	0.014	0.014	0.020	0.019
Model 2					
Durbin-Watson			1.967		1.789
Cook's distance					
	Min		0.000		0.000
	Max		0.084		0.202
	Mean		0.008		0.012
	StdDV		0.015		0.026

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